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Tuesday, February 12, 2008
Phone: (571) 272-1353
Case Serial Number: 10 / 542215

From: JAN DELAVAL
Location: EIC1700
REM-4B28 / REM-4A30
Phone: (571) 272-2504

jan.delaval@uspto.gov

Search Notes

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STIC
Scientific & Technical Information Center

EIC 1700
SEARCH REQUEST

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Today's Date 2-5-08

Name Wayne Langel

AU/Org. 1793 Examiner # 60603
E09A29 (Jensen)
Bld.&Rm.# Phone 272-1353

Priority App. Filing Date 2-28-03

Case/App. # 10/542215

Format for Search Results
EMAIL ___ PAPER ___

If this is a Board of Appeals case, check here ☐

Synonyms

Describe this invention in your own words. See attached claims. Please note that claims 18-20 are directed to the catalyst itself.

Terms to avoid

Additional Comments

Please submit completed form to your EIC. SPE Signature here indicates Rush

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STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher:	NA Sequence (#)	STN ✓
Searcher Phone #:	AA Sequence (#)	Dialog
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Date Searcher Picked Up: 2/12/08	Bibliographic ✓	Dr.Link
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Searcher Prep & Review Time:	Fulltext	Sequence Systems
Clerical Prep Time: 25	Patent Family	WWW/Internet
Online Time: + 55	Other	Other (specify)

PTO-1590 (8-01)

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=> fil hcaplus
FILE 'HCAPLUS' ENTERED AT 16:04:51 ON 12 FEB 2008
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FILE LAST UPDATED: 11 Feb 2008  (20080211/ED)

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 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

=> d l77 bib abs hitind hitstr retable tot

L77  ANSWER 1 OF 27  HCAPLUS  COPYRIGHT 2008 ACS on STN
AN   2004:738415  HCAPLUS
DN   141:227693
TI   Catalyst for the production of hydrogen cyanide by the
     BMA process
IN   Von Hippel, Lukas; Weber, Robert; Bewersdorf, Martin; Gail, Ernst;
     Schwarz, Helmut
PA   Degussa Ag, Germany
SO   Ger. Offen., 7 pp.
     CODEN: GWXXBX
DT   Patent
LA   German
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.         DATE
     ---------------     ----   --------    --------------------    --------
PI   DE 10309209          A1    20040909    DE 2003-10309209        20030228 <--
     AU 2004215667        A1    20040910    AU 2004-215667          20040218 <--
     WO 2004076351        A1    20040910    WO 2004-EP1516          20040218 <--
         W:. AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,
             GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,
             LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO
         RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE,
             BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU,
             MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN,
             GQ, GW, ML, MR, NE, SN, TD, TG
     EP 1638889           A1    20060329    EP 2004-712015          20040218 <--
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK
     CN 1756721           A     20060405    CN 2004-80005523        20040218 <--
     JP 2006519154        T     20060824    JP 2006-501873          20040218 <--
     US 2006257308        A1    20061116    US 2004-542215          20040218 <--
     IN 2005KN01529       A     20061208    IN 2005-KN1529          20050803 <--
```

PRAI DE 2003-10309209 A 20030228 <--
WO 2004-EP1516 W 20040218

AB **Hydrogen cyanide** is produced by the **BMA** process wherein an **aliphatic** C1-4 **hydrocarbon**, especially **methane**, is reacted with **ammonia** at 1000-1350° in the presence of a **platinum**-containing catalyst. The formation of soot on the catalyst can be reduced by doping the **Pt** of the catalyst with Cu, Ag, Au, Pd, or W. The catalyst can addnl. contain Al, Mg, or their nitrides. The catalyst is supported on a carrier made of an oxide or nitride ceramic material, especially alumina. The catalyst contains **Pt**, Au, and/or Ag and aluminum nitride and/or a **platinum** -aluminum-alloy as main components and is applied on the inner wall of reaction tubes using oxidic or silicate-containing adhesives.

IC ICM B01J0023-42
ICS **C01C0003-02**; B01J0021-02

CC 49-8 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67

ST **hydrogen cyanide** manuf **BMA** process catalyst **platinum** doped

IT Polysiloxanes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(Ph Et, lacquer component; catalyst for production of **hydrogen cyanide** by **BMA** process)

IT Soot
(catalyst for production of **hydrogen cyanide** by **BMA** process)

IT **7429-90-5**, Aluminum, uses **7440-05-3**, Palladium, uses **7440-06-4**, **Platinum**, uses **7440-22-4**, Silver, uses **7440-33-7**, Tungsten, uses **7440-50-8**, Copper, uses **7440-57-5**, Gold, uses **24304-00-5**, Aluminum nitride **57621-59-7**
RL: CAT (Catalyst use); USES (Uses)
(catalyst for production of **hydrogen cyanide** by **BMA** process)

IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **CPS (Chemical process)**; **IMF (Industrial manufacture)**; **PEP (Physical, engineering or chemical process)**; **PREP (Preparation)**; **PROC (Process)**
(catalyst for production of **hydrogen cyanide** by **BMA** process)

IT **74-82-8**, **Methane**, reactions **7664-41-7**, **Ammonia**, reactions
RL: **CPS (Chemical process)**; **PEP (Physical, engineering or chemical process)**; RCT (Reactant); **PROC (Process)**; RACT (Reactant or reagent)
(catalyst for production of **hydrogen cyanide** by **BMA** process)

IT **1344-28-1**, Alumina, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst support; catalyst for production of **hydrogen cyanide** by **BMA** process)

IT 7631-86-9, Aerosil, uses
RL: NUU (Other use, unclassified); USES (Uses)
(colloidal; catalyst for production of **hydrogen cyanide** by **BMA** process)

IT 9003-63-8, Poly(butyl)methacrylate 9011-14-7, Poly(methyl)methacrylate
RL: NUU (Other use, unclassified); USES (Uses)
(lacquer component; catalyst for production of **hydrogen cyanide** by **BMA** process)

IT **7429-90-5**, Aluminum, uses **7440-05-3**, Palladium, uses

7440-06-4, **Platinum**, uses **7440-22-4**, Silver, uses **7440-33-7**, Tungsten, uses **7440-50-8**, Copper, uses **7440-57-5**, Gold, uses **24304-00-5**, Aluminum nitride **57621-59-7**
RL: CAT (Catalyst use); USES (Uses)
(catalyst for production of **hydrogen cyanide** by **BMA** process)

RN 7429-90-5 HCAPLUS
CN Aluminum (CA INDEX NAME)

Al

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

RN 7440-33-7 HCAPLUS
CN Tungsten (CA INDEX NAME)

W

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

RN 7440-57-5 HCAPLUS
CN Gold (CA INDEX NAME)

Au

RN 24304-00-5 HCAPLUS
CN Aluminum nitride (AlN) (CA INDEX NAME)

N
||
Al

RN 57621-59-7 HCAPLUS
CN Aluminum alloy, nonbase, Al,Pt (CA INDEX NAME)

Component	Component Registry Number
Al	7429-90-5
Pt	7440-06-4

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **CPS (Chemical process)**; **IMF (Industrial manufacture)** ; **PEP (Physical, engineering or chemical process)**; **PREP (Preparation)**; **PROC (Process)**
(catalyst for production of **hydrogen cyanide** by **BMA** process)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

N
|||
CH

IT **74-82-8, Methane**, reactions **7664-41-7, Ammonia**, reactions
RL: **CPS (Chemical process)**; **PEP (Physical, engineering or chemical process)**; RCT (Reactant); **PROC (Process)**; RACT (Reactant or reagent)
(catalyst for production of **hydrogen cyanide** by **BMA** process)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

IT **1344-28-1**, Alumina, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst support; catalyst for production of **hydrogen cyanide** by **BMA** process)
RN 1344-28-1 HCAPLUS
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L77 ANSWER 2 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:178480 HCAPLUS
DN 138:354081
TI Probing Cooperative Effects in Bimetallic Clusters: Indications of C-N Coupling of **CH4** and **NH3** Mediated by the Cluster Ion **PtAu**+ in the Gas Phase
AU Koszinowski, Konrad; Schroeder, Detlef; **Schwarz, Helmut**
CS Institut fuer Chemie der Technischen Universitaet Berlin, Berlin, D-10623, Germany
SO Journal of the American Chemical Society (**2003**), 125(13), 3676-3677
CODEN: JACSAT; ISSN: 0002-7863
PB American Chemical Society
DT Journal
LA English
AB The bimetallic cluster ion **PtAu**+ activates **methane** in the gas-phase, yielding the carbene **PtAuCH2**+, which further reacts with **ammonia** under C-N coupling. In contrast, neither **Pt2**+ nor Au2+ mediates C-N bond formation. This example demonstrates how bond activation in the gas phase can be tuned by cooperative effects in bimetallic clusters.
CC 29-13 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 22
ST **methane ammonia** coupling **platinum** gold cluster ion catalyst; carbon nitrogen coupling **platinum** gold cluster ion catalyst
IT Bond
(activation; carbon-nitrogen coupling of **methane** and **ammonia** mediated by **PtAu**+ cluster ion)
IT Cluster ions
Coupling reaction
Ion-molecule reaction
(carbon-nitrogen coupling of **methane** and **ammonia** mediated by **PtAu**+ cluster ion)
IT Carbenes (methylene derivatives)
RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)
(carbon-nitrogen coupling of **methane** and **ammonia** mediated by **PtAu**+ cluster ion)
IT **155305-90-1**
RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)
(carbon-nitrogen coupling of **methane** and **ammonia** mediated by **PtAu**+ cluster ion)
IT **74-82-8**, **Methane**, reactions 558-20-3, **Methane** -d4 **7664-41-7**, **Ammonia**, reactions **90992-82-8**
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(carbon-nitrogen coupling of **methane** and **ammonia** mediated by **PtAu**+ cluster ion)
IT **74-90-8**, **Hydrocyanic acid**, properties
3017-23-0, **Hydrocyanic acid**-d
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(carbon-nitrogen coupling of **methane** and **ammonia** mediated by **PtAu**+ cluster ion)
IT **66525-35-7**, reactions **73146-08-4**, reactions
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)

(carbon-nitrogen coupling of **methane** and **ammonia**
mediated by **PtAu**+ cluster ion)

IT **155305-90-1**
RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)
(carbon-nitrogen coupling of **methane** and **ammonia**
mediated by **PtAu**+ cluster ion)
RN 155305-90-1 HCAPLUS
CN Gold, compd. with platinum (1:1), ion(1+) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Au	1	7440-57-5
Pt	1	7440-06-4

IT **74-82-8**, **Methane**, reactions **7664-41-7**, **Ammonia**, reactions **90992-82-8**
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(carbon-nitrogen coupling of **methane** and **ammonia**
mediated by **PtAu**+ cluster ion)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

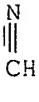
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

RN 90992-82-8 HCAPLUS
CN Gold, compd. with platinum (1:1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Au	1	7440-57-5
Pt	1	7440-06-4

IT **74-90-8**, **Hydrocyanic acid**, properties
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(carbon-nitrogen coupling of **methane** and **ammonia**
mediated by **PtAu**+ cluster ion)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)



IT 66525-35-7, reactions 73146-08-4, reactions
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(carbon-nitrogen coupling of **methane** and **ammonia** mediated by **PtAu**+ cluster ion)
RN 66525-35-7 HCAPLUS
CN Gold, ion (Au21+) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 73146-08-4 HCAPLUS
CN Platinum, ion (Pt21+) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Achatz, U	2000	320	53	Chem Phys Lett	HCAPLUS
Aschi, M	1998	110	858	Angew Chem	
Aschi, M	1998	37	829	Angew Chem, Int Ed	HCAPLUS
Bockholt, A	1997	93	3869	J Chem Soc, Faraday	HCAPLUS
Cox, D	1991	19	353	Z Phys D	HCAPLUS
Diefenbach, M	1999	121	10614	J Am Chem Soc	HCAPLUS
Eller, K	1990	112	621	J Am Chem Soc	HCAPLUS
Engeser, M	2003			J Phys Chem A In pre	
Forbes, R	1988	83	23	Int J Mass Spectrom	HCAPLUS
Hasenberg, D	1986	97	156	J Catal	HCAPLUS
Irikura, K	1991	95	8344	J Phys Chem	HCAPLUS
Zhang, X	2001	123	5563	J Am Chem Soc	HCAPLUS

L77 ANSWER 3 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:798109 HCAPLUS
DN 135:346517
TI Grain stabilized **platinum**-group metal catalyst for gas phase reactions, especially for the production of **hydrogen cyanide**
IN Koch, Theodore Augur; Bueker, David J.; Krause, Karl R.; Shengupta, Sourav K.
PA E. I. Du Pont de Nemours & Co., USA
SO PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001080988	A2	20011101	WO 2001-US13325	20010425 <--
WO 2001080988	A3	20020228		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRAI US 2000-557225 A 20000425 <--
AB A catalyst for gas phase reactions, especially for the production of **hydrogen cyanide**, consists of at least one

platinum-group metal, preferably platinum (90-100%) and rhodium (0-10%), grain stabilized with a group IIIB or group IVB metal oxide, nitride, carbide, or sulfide, preferably zirconia or yttria that is dispersed throughout the platinum-group metal. For the production of hydrogen cyanide, a hydrocarbon, ammonia and oxygen contact the catalyst in form of a gauze at ≥ 500°C. The hydrogen cyanide is used for the production of nylon. The catalyst can be used for partial oxidation of synthesis gas.

IC ICM B01J0008-02
ICS C01C0003-02; B01J0023-56; B01J0035-06

CC 49-8 (Industrial Inorganic Chemicals)
Section cross-reference(s): 35, 51, 67

ST platinum rhodium catalyst grain stabilized hydrogen cyanide prodn; zirconia yttria catalyst stabilizer hydrogen cyanide prodn; polyamide polymn hydrogen cyanide prodn catalyst

IT Platinum-group metal compounds
RL: CAT (Catalyst use); USES (Uses)
(alloys; grain stabilized platinum-group metal catalyst for gas phase reactions, especially for the production of hydrogen cyanide)

IT Catalysts
(for HCN-production; grain stabilized platinum-group metal catalyst for gas phase reactions, especially for the production of hydrogen cyanide)

IT Air
(for prodn of HCN; grain stabilized platinum-group metal catalyst for gas phase reactions, especially for the production of hydrogen cyanide)

IT Group IIIB element oxides
Group IVB element oxides
Platinum-group metals
RL: CAT (Catalyst use); USES (Uses)
(grain stabilized platinum-group metal catalyst for gas phase reactions, especially for the production of hydrogen cyanide)

IT Polyamides, preparation
RL: PNU (Preparation, unclassified); PREP (Preparation)
(grain stabilized platinum-group metal catalyst for gas phase reactions, especially for the production of hydrogen cyanide)

IT Synthesis gas manufacturing
(partial oxidation; grain stabilized platinum-group metal catalyst for gas phase reactions, especially for the production of hydrogen cyanide)

IT Oxidation catalysts
(partial; grain stabilized platinum-group metal catalyst for gas phase reactions, especially for the production of hydrogen cyanide)

IT Transition metal alloys
RL: CAT (Catalyst use); USES (Uses)
(platinum-group metal alloys; grain stabilized platinum-group metal catalyst for gas phase reactions, especially for the production of hydrogen cyanide)

IT 74-82-8, Methane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(for prodn of HCN, partial oxidation of; grain stabilized platinum-group metal catalyst for gas phase reactions, especially for the production of hydrogen cyanide)

IT **7664-41-7, Ammonia**, reactions 7782-44-7, Oxygen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(for prodn of HCN; grain stabilized **platinum**-group metal catalyst for gas phase reactions, especially for the production of **hydrogen cyanide**)
IT 1306-38-3, Cerium oxide (CeO2), uses 1312-81-8, Lanthanum oxide 7439-88-5, Iridium, uses 7440-04-2, Osmium, uses **7440-05-3**, Palladium, uses **7440-06-4**, **Platinum**, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses **11125-17-0** 12055-23-1, Hafnium oxide 12060-08-1, Scandium oxide 13463-67-7, Titanium oxide, uses **53579-45-6 156715-84-3** **371237-61-5 371237-62-6**
RL: CAT (Catalyst use); USES (Uses)
(grain stabilized **platinum**-group metal catalyst for gas phase reactions, especially for the production of **hydrogen cyanide**)
IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture)**; RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(production of, used for nylon production; grain stabilized **platinum**-group metal catalyst for gas phase reactions, especially for the production of **hydrogen cyanide**)
IT 1314-23-4, Zirconia, uses 1314-36-9, Yttria, uses
RL: CAT (Catalyst use); USES (Uses)
(stabilizer; grain stabilized **platinum**-group metal catalyst for gas phase reactions, especially for the production of **hydrogen cyanide**)
IT **74-82-8, Methane**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(for prodn of HCN, partial oxidation of; grain stabilized **platinum**-group metal catalyst for gas phase reactions, especially for the production of **hydrogen cyanide**)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

IT **7664-41-7, Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(for prodn of HCN; grain stabilized **platinum**-group metal catalyst for gas phase reactions, especially for the production of **hydrogen cyanide**)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

IT **7440-05-3**, Palladium, uses **7440-06-4**, **Platinum**, uses **11125-17-0 53579-45-6 156715-84-3** **371237-61-5 371237-62-6**
RL: CAT (Catalyst use); USES (Uses)
(grain stabilized **platinum**-group metal catalyst for gas phase reactions, especially for the production of **hydrogen cyanide**)
RN 7440-05-3 HCAPLUS

CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 11125-17-0 HCAPLUS
CN Platinum alloy, base, Pt 90,Rh 10 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	90	7440-06-4
Rh	10	7440-16-6

RN 53579-45-6 HCAPLUS
CN Platinum alloy, base, Pt 95,Rh 5 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	95	7440-06-4
Rh	5	7440-16-6

RN 156715-84-3 HCAPLUS
CN Platinum alloy, base, Pt 95-100,Rh 0-5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	95 - 100	7440-06-4
Rh	0 - 5	7440-16-6

RN 371237-61-5 HCAPLUS
CN Platinum alloy, base, Pt 94,Rh 6.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	94	7440-06-4
Rh	6.1	7440-16-6

RN 371237-62-6 HCAPLUS
CN Platinum alloy, base, Pt 91,Rh 9.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	91	7440-06-4
Rh	9.3	7440-16-6

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture)**; RCT (Reactant); **PREP**

(**Preparation**); RACT (Reactant or reagent)
(production of, used for nylon production; grain stabilized **platinum**
-group metal catalyst for gas phase reactions, especially for the
production of
hydrogen cyanide)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

L77 ANSWER 4 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1999:752892 HCAPLUS
DN 131:353229
TI Catalyst system using flow-through radiation shielding for producing **hydrogen cyanide**
IN Decourcy, Michel Stanley; Woody, Michel Gene; Shaw, Karen Ann; Mendoza, Joy Lyndon
PA Rohm and Haas Co., USA
SO Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 959042	A1	19991124	EP 1999-303534	19990506 <--
	EP 959042	B1	20020710		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6221327	B1	20010424	US 1999-270410	19990316 <--
	ZA 9903122	A	19991105	ZA 1999-3122	19990505 <--
	AU 9926989	A	19991125	AU 1999-26989	19990507 <--
	AU 762780	B2	20030703		
	JP 2000026116	A	20000125	JP 1999-136236	19990517 <--
	US 2001043902	A1	20011122	US 2001-828752	20010409 <--
	US 6514468	B2	20030204		
PRAI	US 1998-85744P	P	19980515 <--		
	US 1999-270410	A	19990316 <--		

AB A catalyst system using flow-through thermal radiation shielding of the reaction zone is used for production of HCN from **CH4** and **NH3** at 800-1400°C. The thermal shield is a ceramic foam, especially ceramic foam tiles, from carbides, nitrides, boronitrides, silicates, borosilicates, Al2O3, CaO, MgO, SiO2, ZrO2, or Y2O3. The reactants are pre-heated in flow through the shielding. The catalyst is a **platinum** group metal, e.g., **Pt**, Rh, Ir, Pd, Os, or Ru.
IC ICM **C01C0003-02**
ICS B01J0012-00
CC 49-2 (Industrial Inorganic Chemicals)
Section cross-reference(s): 57, 67
ST **hydrogen cyanide** prodn catalyst flowthrough thermal shield; ceramic heat shield HCN prodn catalyst
IT **Platinum**-group metals
RL: CAT (Catalyst use); USES (Uses)
(catalysts; **hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)

IT Borosilicates
Carbides
Nitrides
Silicates, uses
RL: DEV (Device component use); USES (Uses)
(ceramic foam tiles; **hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)

IT Tiles
(ceramic, foam; **hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)

IT Combustion
Heat shields
Oxidation
(**hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)

IT Hydrocarbons, reactions
RL: **PEP (Physical, engineering or chemical process)**; RCT (Reactant); **PROC (Process)**; RACT (Reactant or reagent)
(**hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)

IT 7439-88-5, Iridium, uses 7440-04-2, Osmium, uses **7440-05-3**, Palladium, uses **7440-06-4**, **Platinum**, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts; **hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)

IT 1305-78-8, Calcia, uses 1309-48-4, Magnesia, uses 1314-23-4, Zirconia, uses 1314-36-9, Yttria, uses **1344-28-1**, Alumina, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(ceramic foam tiles; **hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)

IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture)**; **PEP (Physical, engineering or chemical process)**; **PREP (Preparation)**; **PROC (Process)**
(**hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)

IT **74-82-8**, **Methane**, reactions **7664-41-7**, **Ammonia**, reactions
RL: **PEP (Physical, engineering or chemical process)**; RCT (Reactant); **PROC (Process)**; RACT (Reactant or reagent)
(**hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)

IT **7440-05-3**, Palladium, uses **7440-06-4**, **Platinum**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts; **hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **1344-28-1**, Alumina, uses
RL: DEV (Device component use); USES (Uses)
(ceramic foam tiles; **hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)
RN 1344-28-1 HCAPLUS
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture)**; **PEP (Physical, engineering or chemical process)**; **PREP (Preparation)**; **PROC (Process)**
(**hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

N
|||
CH

IT **74-82-8**, **Methane**, reactions **7664-41-7**, **Ammonia**, reactions
RL: **PEP (Physical, engineering or chemical process)**; RCT (Reactant); **PROC (Process)**; RACT (Reactant or reagent)
(**hydrogen cyanide** production using catalyst system with flow-through thermal radiation shield)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cox, J	1970			US 3545939 A	HCAPLUS
Du Pont De Nemours	1965			GB 1009137 A	

L77 ANSWER 5 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1999:694921 HCAPLUS
DN 131:338910
TI HCN synthesis from **methane** and **ammonia**: Mechanisms of **Pt**+-mediated C-N coupling
AU Diefenbach, Martin; Broenstrup, Mark; Aschi, Massimiliano; Schroeder, Detlef; **Schwarz, Helmut**

CS Institut fuer Organische Chemie, Technische Universitaet Berlin, Berlin, D-10623, Germany
SO Journal of the American Chemical Society (1999), 121(45), 10614-10625
CODEN: JACSAT; ISSN: 0002-7863
PB American Chemical Society
DT Journal
LA English
AB The Pt+-mediated coupling of **methane** and **ammonia** has been studied both exptl. and computationally. This system serves as a model for the Degussa process for the industrial production of the valuable feedstock **hydrogen cyanide**. Mass spectrometric studies demonstrate that C-N bond formation is catalyzed efficiently by Pt+. Details of the exptl. observed reaction channels have been explored computationally using the B3LYP hybrid DFT/HF functional. In the first reaction step, Pt+ dehydrogenates **CH4** to yield **PtCH2**+; in contrast, dehydrogenation of **ammonia** by Pt+ is endothermic and does not occur exptl. Starting from **PtCH2**+ and **NH3**, C-N bond formation, which constitutes the crucial step in making HCN from **CH4** and **NH3**, is achieved via two independent pathways. The major pathway is exothermic by 23 kcal mol-1 and yields neutral **PtH** and CH2NH2+. The second pathway involves a dehydrogenation to yield the aminocarbene complex **PtC**(H)NH2+ (ΔrH = -36 kcal mol-1); dehydrogenation of **PtC**(H)NH2+ to **PtCNH**+ is exothermic with respect to **PtCH2**+ + **NH3** (ΔrH = -8 kcal mol-1) but hindered by kinetic barriers. A comparison of Pt+ with other transition metal cations (Fe+, Co+, Rh+, W+, Os+, Ir+, and Au+) shows that Pt+ is unique with respect to its ability to activate 1 equiv of **CH4** and to mediate C-N bond coupling.
CC 49-1 (Industrial Inorganic Chemicals)
ST **hydrogen cyanide** synthesis **ammonia** **methane** carbon nitrogen coupling
IT Coupling reaction catalysts
(**platinum**,; HCN synthesis from **methane** and **ammonia**, mechanisms of Pt+-mediated C-N coupling)
IT **74-82-8**, **Methane**, processes **7664-41-7**, **Ammonia**, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(HCN synthesis from **methane** and **ammonia**, mechanisms of Pt+-mediated C-N coupling)
IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(HCN synthesis from **methane** and **ammonia**, mechanisms of Pt+-mediated C-N coupling)
IT **7440-06-4**, **Platinum**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts,; HCN synthesis from **methane** and **ammonia**, mechanisms of Pt+-mediated C-N coupling)
IT **74-82-8**, **Methane**, processes **7664-41-7**, **Ammonia**, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(HCN synthesis from **methane** and **ammonia**, mechanisms of Pt+-mediated C-N coupling)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(HCN synthesis from **methane** and **ammonia**, mechanisms of **Pt**+-mediated C-N coupling)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

IT **7440-06-4, Platinum**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts,; HCN synthesis from **methane** and **ammonia**, mechanisms of **Pt**+-mediated C-N coupling)
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Albert, G	1997	268	235	Chem Phys Lett	HCAPLUS
Aschi, M	1998	37	829	Angew Chem, Int Ed	HCAPLUS
Becke, A	1993	98	5648	J Chem Phys	HCAPLUS
Bockholt, A	1997	93	3869	J Chem Soc, Faraday	HCAPLUS
Bouchoux, G	1992	114	10000	J Am Chem Soc	HCAPLUS
Bronstrup, M	1998	81	2348	Helv Chim Acta	
Bronstrup, M	1999	18	1939	Organometallics	
Buckner, S	1988	7	1583	Polyhedron	HCAPLUS
Burnier, R	1982	104	7436	J Am Chem Soc	HCAPLUS
Carroll, J	1995	99	14388	J Phys Chem	HCAPLUS
Cody, R	1982	41	199	Int J Mass Spectrom	HCAPLUS
Eller, K	1989	93	243	Int J Mass Spectrom	HCAPLUS
Eller, K	1990	112	621	J Am Chem Soc	HCAPLUS
Elschenbroich, C	1992			Organometallics:A Co	
Fleming, I	1990			Grenzorbitale und Re	
Forbes, R	1988	83	23	Int J Mass Spectrom	HCAPLUS
Freiser, B	1996			Organometallic Ion C	
Frisch, M	1995			Gaussian 94, Revisio	
Glukhovtsev, M	1997	101	316	J Phys Chem A	HCAPLUS
Hasenberg, D	1985	91	116	J Catal	HCAPLUS
Hasenberg, D	1986	97	156	J Catal	HCAPLUS
Hasenberg, D	1987	104	441	J Catal	HCAPLUS
Heinemann, C	1995	239	75	Chem Phys Lett	HCAPLUS
Heinemann, C	1995	117	495	J Am Chem Soc	HCAPLUS

Heinemann, C	1996	118	2023	J Am Chem Soc	HCAPLUS
Heinemann, C	1996	104	4642	J Chem Phys	HCAPLUS
Heiz, U	1999	121	3214	J Am Chem Soc	HCAPLUS
Herrmann, W	1997	109	2257	Angew Chem	
Hess, B	1997	101	1	Ber Bunsen-Ges Phys	HCAPLUS
Hess, B	1995		152	Modern Electronic St	HCAPLUS
Holthausen, M	1995	240	245	Chem Phys Lett	HCAPLUS
Huber, H	1979			Constants of Diatomi	
Hwang, S	1988	114	230	J Catal	HCAPLUS
Hwang, S	1989	93	8327	J Phys Chem	HCAPLUS
Irikura, K	1989	111	75	J Am Chem Soc	HCAPLUS
Irikura, K	1991	113	2769	J Am Chem Soc	HCAPLUS
Irikura, K	1991	95	8344	J Phys Chem	HCAPLUS
Jackson, G	1997	119	7567	J Am Chem Soc	HCAPLUS
Kaltsoyannis, N	1996	1	1	J Chem Soc, Dalton T	
Kellogg, C	1999	103	1150	J Phys Chem A	HCAPLUS
Kikhtenko, A	1994	13	2536	Organometallics	HCAPLUS
Koch, W	1984	71	473	Naturwissenschaften	HCAPLUS
Lias, S	1988	17		J Phys Chem Ref Data	
Marcalo, J	1996	157/1	265	Int J Mass Spectrom	HCAPLUS
Moore, C	1971			Atomic Energy Levels	
Niedner-Schatteburg, G				Unpublished results	
Palma, A	1996	105	5091	J Chem Phys	HCAPLUS
Pavlov, M	1997	101	1567	J Phys Chem A	HCAPLUS
Pyykko, P	1988	88	563	Chem Rev	HCAPLUS
Schwarz, H	1991	30	820	Angew Chem, Int Ed E	
Somorjai, G	1994			Introduction to Surf	
Stephens, P	1994	98	11632	J Phys Chem	
Su, T	1982	76	5183	J Chem Phys	HCAPLUS
Su, T	1988	88	4102	J Chem Phys	HCAPLUS
Su, T	1988	89	5355	J Chem Phys	HCAPLUS
Tolbert, M	1986	90	5015	J Phys Chem	HCAPLUS
Uggerud, E	1997	167/1	117	Int J Mass Spectrom	
Vulpius, T	1995	1	121	Eur Mass Spectrom	
Waletzko, N	1988	34	1146	AIChE J	HCAPLUS
Wesendrup, R	1994	33	1174	Angew Chem, Int Ed E	
Williams, D	1974	96	6753	J Am Chem Soc	HCAPLUS
Wittborn, C	1995	201	357	Chem Phys	HCAPLUS

L77 ANSWER 6 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1999:597448 HCAPLUS
DN 131:201849
TI Production of **hydrogen cyanide**
IN **Von Hippel, Lukas**; Arntz, Dietrich; Vanheertum, Rudolf; Sauer, Manfred; Kuttruf, Bernd
PA **Degussa-Huls Aktiengesellschaft, Germany**
SO Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 941965	A1	19990915	EP 1999-103461	19990223 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	DE 19810484	A1	19990916	DE 1998-19810484	19980311 <--
	JP 11292532	A	19991026	JP 1999-63933	19990310 <--
PRAI	DE 1998-19810484	A	19980311 <--		

AB A gas mixture of **CH4**, **NH3**, and O2 (e.g., in the form of

air) is converted essentially autothermically at an elevated temperature in the presence of a catalyst to give a mixture of HCN, H2, and H2O(g). The ammonoxidn. reaction is controlled by changing the O2 input so that the heat of reaction compensates thermal leaks of the reactor. The O2/HCN mol ratio is (0.5-1.5):1, preferably (0.5-0.67):1. The heat of reaction is used for preheating of the feed gas by using indirect countercurrent heat transfer.

IC ICM C01C0003-02
CC 49-2 (Industrial Inorganic Chemicals)
ST **hydrogen cyanide** manuf
IT Steam
(byproduct in manufacture of **hydrogen cyanide** by ammonoxidn. of **methane**)
IT Process control
(in manufacture of **hydrogen cyanide** by ammonoxidn. of **methane**)
IT 1333-74-0P, Hydrogen, preparation
RL: **IMF (Industrial manufacture)**; **PEP (Physical, engineering or chemical process)**; **PREP (Preparation)**; **PROC (Process)**
(byproduct in manufacture of **hydrogen cyanide** by ammonoxidn. of **methane**)
IT **7440-06-4, Platinum**, uses **11107-71-4, Platinum**, rhodium
RL: CAT (Catalyst use); USES (Uses)
(catalyst in manufacture of **hydrogen cyanide** by ammonoxidn. of **methane**)
IT **74-82-8, Methane**, processes
RL: **PEP (Physical, engineering or chemical process)**; **PROC (Process)**
(in manufacture of **hydrogen cyanide** by ammonoxidn. of)
IT **7664-41-7, Ammonia**, processes 7782-44-7, Oxygen, processes
RL: **PEP (Physical, engineering or chemical process)**; **PROC (Process)**
(in manufacture of **hydrogen cyanide** by ammonoxidn. of **methane**)
IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture)**; **PEP (Physical, engineering or chemical process)**; **PREP (Preparation)**; **PROC (Process)**
(manufacture of **hydrogen cyanide** by ammonoxidn. of **methane**)
IT **7440-06-4, Platinum**, uses **11107-71-4, Platinum**, rhodium
RL: CAT (Catalyst use); USES (Uses)
(catalyst in manufacture of **hydrogen cyanide** by ammonoxidn. of **methane**)
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 11107-71-4 HCAPLUS
CN Platinum alloy, nonbase, Pt,Rh (CA INDEX NAME)

Component Component Registry Number

Pt	7440-06-4
Rh	7440-16-6

IT **74-82-8, Methane**, processes
RL: **PEP (Physical, engineering or chemical process)**; **PROC (Process)**
(in manufacture of **hydrogen cyanide** by ammonoxidn. of)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

IT **7664-41-7, Ammonia**, processes
RL: **PEP (Physical, engineering or chemical process)**; **PROC (Process)**
(in manufacture of **hydrogen cyanide** by ammonoxidn. of **methane**)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture)**; **PEP (Physical, engineering or chemical process)**; **PREP (Preparation)**; **PROC (Process)**
(manufacture of **hydrogen cyanide** by ammonoxidn. of **methane**)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bockholt, A	1997	Bd. 9	3869	JOURNAL OF THE CHEMI	
Du Pont	1997			WO 9746315 A	HCAPLUS
Grin, G	1994		160	Effect of nitrogen a	HCAPLUS
Grin, G	1993	Bd. 6	2025	ZH PRIKL KHIM	
Ici Plc	1997			WO 9709273 A	HCAPLUS
Sherwood, P	1959	Bd. 3	22	THE PETROLEUM ENGINE	
Toyo Koatsu				DE 1077197 B	HCAPLUS

L77 ANSWER 7 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1999:394041 HCAPLUS
DN 131:33533
TI Preparation of **hydrocyanic acid** using the Andrussow method
IN **von Hippel, Lukas**; Sauer, Manfred; Arntz, Dietrich; Vanheertum,

Rudolf
PA **Degussa-Huels A.-G., Germany**
SO Ger. Offen., 6 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19754988	A1	19990617	DE 1997-19754988	19971211 <--
	EP 922675	A1	19990616	EP 1998-122730	19981128 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 11236215	A	19990831	JP 1998-348689	19981208 <--
	BR 9805332	A	19991109	BR 1998-5332	19981211 <--
PRAI	DE 1997-19754988	A	19971211 <--		

AB **Hydrocyanic acid** and water are produced from **methane**, **ammonia** and oxygen in a compact coaxial-tube catalytic reactor at elevated temperature The hot product gases are used to warm the feed gases to the reaction temperature by indirect counterflow heat exchange. Oxygen (air) can be warmed and fed to the reactor, sep.

IC ICM **C01C0003-02**
CC 49-2 (Industrial Inorganic Chemicals)
ST **hydrocyanic acid** prodn Andrussow method
IT **11107-71-4**, **Platinum** rhodium alloy
RL: CAT (Catalyst use); USES (Uses)
(**hydrocyanic acid** production from **methane**, **ammonia** and oxygen using Andrussow method)
IT **74-90-8P**, **Hydrocyanic acid**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(**hydrocyanic acid** production from **methane**, **ammonia** and oxygen using Andrussow method)
IT **74-82-8**, **Methane**, reactions **7664-41-7**, **Ammonia**, reactions 7782-44-7, Oxygen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**hydrocyanic acid** production from **methane**, **ammonia** and oxygen using Andrussow method)
IT **11107-71-4**, **Platinum** rhodium alloy
RL: CAT (Catalyst use); USES (Uses)
(**hydrocyanic acid** production from **methane**, **ammonia** and oxygen using Andrussow method)
RN 11107-71-4 HCAPLUS
CN Platinum alloy, nonbase, Pt,Rh (CA INDEX NAME)

Component	Component Registry Number
Pt	7440-06-4
Rh	7440-16-6

IT **74-90-8P**, **Hydrocyanic acid**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(**hydrocyanic acid** production from **methane**, **ammonia** and oxygen using Andrussow method)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

N
‖
CH

IT **74-82-8**, **Methane**, reactions **7664-41-7**, **Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**hydrocyanic acid** production from **methane**, **ammonia** and oxygen using Andrussow method)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				DE 1253251	
Anon				CH 338429	

L77 ANSWER 8 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1998:267399 HCAPLUS
DN 129:15794
TI A gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**
AU Aschi, Massimiliano; Bronstrup, Mark; Diefenbach, Martin; Harvey, Jeremy N.; Schroder, Detlef; **Schwarz, Helmut**
CS Institut fur Organische Chemie der Technischen Universitat, Berlin, D-10623, Germany
SO Angewandte Chemie, International Edition (**1998**), 37(6), 829-832
CODEN: ACIEF5; ISSN: 1433-7851
PB Wiley-VCH Verlag GmbH
DT Journal
LA English
AB The title reaction was examined using Fourier transform ion cyclotron resonance mass spectroscopy. Two independent routes are suggested for the formation of HCN; one occurs entirely on the surface and the other is terminated in the gas phase. Common to both paths is the initial activation of **methane** at **platinum**.
CC 22-4 (Physical Organic Chemistry)
ST **methane ammonia** coupling **platinum** catalyst mechanism; **hydrogen cyanide** prepn mechanism
IT Reaction enthalpy
Reaction mechanism
(B3LYP study of reaction of [**PtCH2**]+ with **ammonia**; gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)
IT Carbenes (methylene derivatives)

RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)
(aminocarbene complex intermediate in B3LYP study of reaction of [**PtCH2**]+ with **ammonia**; gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**
)

IT Density functional theory
(gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)

IT **207683-67-8 207683-68-9**
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)
(B3LYP study of reaction of [**PtCH2**]+ with **ammonia**; gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)

IT **207683-69-0**
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(B3LYP study of reaction of [**PtCH2**]+ with **ammonia**; gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)

IT **20561-56-2**, **Platinum** ion(1+), uses
RL: CAT (Catalyst use); USES (Uses)
(gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)

IT **74-82-8**, **Methane**, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)

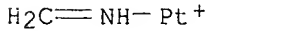
IT **7664-41-7**, **Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)

IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)

IT **157205-36-2**
RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(intermediate; gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)

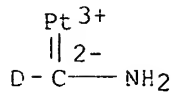
IT **207683-67-8 207683-68-9**
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)
(B3LYP study of reaction of [**PtCH2**]+ with **ammonia**; gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)

RN 207683-67-8 HCAPLUS
CN Platinum(1+), (methanimine)- (9CI) (CA INDEX NAME)

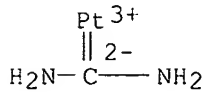


RN 207683-68-9 HCAPLUS

CN Platinum(1+), (aminomethylene-d)- (9CI) (CA INDEX NAME)



IT **207683-69-0**
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(B3LYP study of reaction of [**PtCH2**]+ with **ammonia**; gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)
RN 207683-69-0 HCAPLUS
CN Platinum(1+), (diaminomethylene)- (9CI) (CA INDEX NAME)



IT **20561-56-2, Platinum** ion(1+), uses
RL: CAT (Catalyst use); USES (Uses)
(gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)
RN 20561-56-2 HCAPLUS
CN Platinum, ion (Pt1+) (CA INDEX NAME)

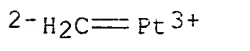
IT **74-82-8, Methane**, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

IT **7664-41-7, Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation); PREP (Preparation)**
(gas-phase model for the **Pt**+-catalyzed coupling of

methane and ammonia)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

IT **157205-36-2**
RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(intermediate; gas-phase model for the **Pt**+-catalyzed coupling of **methane** and **ammonia**)
RN 157205-36-2 HCAPLUS
CN Platinum(1+), methylene- (9CI) (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Arduengo, A	1991	113	361	J Am Chem Soc	HCAPLUS
Arduengo, A	1992	114	5530	J Am Chem Soc	HCAPLUS
Bockholt, A	1997	93	3869	J Chem Soc Faraday T	HCAPLUS
Buckner, S	1988	110	6606	J Am Chem Soc	HCAPLUS
Carroll, J	1995	99	14388	J Phys Chem	HCAPLUS
Crabtree, R	1995	95	987	Chem Rev	HCAPLUS
Eller, K	1989	93	243	Int J Mass Spectrom	HCAPLUS
Eller, K	1990	112	621	J Am Chem Soc	HCAPLUS
Frisch, M	1995			Gaussian 94, Revisio	
Hartley, F	1991			Chemistry of the Pla	
Hasenberg, D	1985	91	116	J Catal	HCAPLUS
Hasenberg, D	1987	104	441	J Catal	HCAPLUS
Heinemann, C	1995	239	75	Chem Phys Lett	HCAPLUS
Heinemann, C	1996	118	2023	J Am Chem Soc	HCAPLUS
Heinemann, C	1996	104	4642	J Chem Phys	HCAPLUS
Herrmann, W	1997	109	2257	Angew Chem	
Herrmann, W	1997	36	2162	Angew Chem Int Ed En	HCAPLUS
Hwang, S	1988	114	230	J Catal	HCAPLUS
Hwang, S	1989	93	8327	J Phys Chem	HCAPLUS
Irikura, K	1989	111	75	J Am Chem Soc	HCAPLUS
Irikura, K	1991	113	2769	J Am Chem Soc	HCAPLUS
Irikura, K	1994	116	8733	J Am Chem Soc	HCAPLUS
Irikura, K	1991	95	8344	J Phys Chem	HCAPLUS
Kappes, M	1981	103	1286	J Am Chem Soc	HCAPLUS
Lias, S	1988	17		J Phys Chem Ref Data	
Lunsford, J	1995	107	1059	Angew Chem	
Lunsford, J	1995	34	970	Angew Chem Int Ed En	HCAPLUS
Millis, P	1997	119	9002	J Am Chem Soc	
Pavlov, M	1997	101	1567	J Phys Chem A	HCAPLUS
Ryan, M	1994	116	9565	J Am Chem Soc	HCAPLUS
Schnabel, P	1991	95	9688	J Phys Chem	HCAPLUS
Schroder, D	1990	102	1468	Angew Chem	
Schroder, D	1990	29	1433	Angew Chem Int Ed En	
Schroder, D	1994	98	68	J Phys Chem	

Stockigt, D	1995		429	Lieb Ann Chem	
Trevor, D	1990	112	3742	J Am Chem Soc	HCAPLUS
Valden, M	1996	99	83	Appl Surf Sci	HCAPLUS
Waletzko, N	1988	34	1146	AIChE J	HCAPLUS
Wesendrup, R	1994	106	1232	Angew Chem	HCAPLUS
Wesendrup, R	1995	107	2176	Angew Chem	
Wesendrup, R	1994	33	1174	Angew Chem Int Ed En	
Wesendrup, R	1995	34	2033	Angew Chem Int Ed En	HCAPLUS

L77 ANSWER 9 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1997:727938 HCAPLUS
DN 128:5378
TI Preparation of catalytically active coatings on ceramic particles in production of catalyst for synthesis of **hydrogen cyanide** from hydrocarbons and **ammonia**
IN von Hippel, Lukas; Bussek, Christian; Sauer, Joerg; Sauer, Manfred; Arntz, Dietrich
PA Degussa AG, Germany
SO Ger., 5 pp.
CODEN: GWXXAW
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19617040	C1	19971030	DE 1996-19617040	19960427 <--
	EP 803470	A1	19971029	EP 1997-106613	19970422 <--
	R: AT, BE, DE, FR, GB, IT				
	AU 9719108	A	19971106	AU 1997-19108	19970424 <--
	AU 720260	B2	20000525		
	ZA 9703575	A	19971119	ZA 1997-3575	19970424 <--
	CA 2203728	A1	19971027	CA 1997-2203728	19970425 <--
	CN 1171296	A	19980128	CN 1997-104240	19970425 <--
	JP 10052645	A	19980224	JP 1997-108532	19970425 <--
	BR 9701940	A	19980818	BR 1997-1940	19970425 <--
	US 5928984	A	19990727	US 1997-845447	19970425 <--
	US 6048512	A	20000411	US 1999-280842	19990330 <--
PRAI	DE 1996-19617040	A	19960427 <--		
	US 1997-845447	A3	19970425 <--		

AB Catalysts for synthesis of HCN from hydrocarbons (especially **CH4**) and **NH3** are prepared by (1) uniform coating of ceramic bodies (especially Al2O3) with a suspension containing dispersed a **Pt** group metal, nitrides of Al, B, Ti, and Si, and optionally Al-containing components (average particle size <100μm, preferably <50 μm), (2) evaporation of the carrier liquid from the suspension, and (3) conversion of the resulting coating into a catalytically active state by slow heating in presence of N2 and/or **NH3** at 1000-1350°. The **Pt**/Al, **Pt**/B, **Pt**/Ti, or **Pt**/Si atomic ratio is (0.001-1) : 1. Activity of the catalyst is higher and service life is longer than those of conventional catalysts, and time necessary for loading of catalyst is short.
IC ICM B01J0027-24
ICS **C01C0003-02**
ICA B01J0037-02; C04B0041-85; C04B0041-88
ICI B01J0027-24, B01J0103-24; B01J0027-24, B01J0105-10; B01J0027-24, B01J0103-32; B01J0027-24, B01J0105-30; B01J0027-24, B01J0103-66
CC 49-2 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67
ST catalyst **hydrogen cyanide** manuf
IT Hydrocarbons, uses

RL: CAT (Catalyst use); USES (Uses)
(catalyst for synthesis of **hydrogen cyanide** from **ammonia** and)

IT Catalysts
(for synthesis of **hydrogen cyanide** from hydrocarbons and **ammonia**)

IT **Platinum**-group metals
RL: CAT (Catalyst use); USES (Uses)
(in catalyst for synthesis of **hydrogen cyanide** from **ammonia** and **methane**)

IT **74-82-8, Methane**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst for synthesis of **hydrogen cyanide** from **ammonia** and)

IT **7664-41-7, Ammonia**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst for synthesis of **hydrogen cyanide** from hydrocarbons and)

IT **74-90-8, Hydrogen cyanide**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst for synthesis of **hydrogen cyanide** from hydrocarbons and **ammonia**)

IT 12033-89-5, Silicon nitride, uses 25583-20-4, Titanium nitride
RL: CAT (Catalyst use); USES (Uses)
(in catalyst for synthesis of **hydrogen cyanide** from **ammonia** and)

IT **7440-06-4, Platinum**, uses 10043-11-5, Boron nitride, uses **24304-00-5**, Aluminum nitride
RL: CAT (Catalyst use); USES (Uses)
(in catalyst for synthesis of **hydrogen cyanide** from **ammonia** and **methane**)

IT **74-82-8, Methane**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst for synthesis of **hydrogen cyanide** from **ammonia** and)

RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

IT **7664-41-7, Ammonia**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst for synthesis of **hydrogen cyanide** from hydrocarbons and)

RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

IT **74-90-8, Hydrogen cyanide**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst for synthesis of **hydrogen cyanide** from hydrocarbons and **ammonia**)

RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

N
|||
CH

IT **7440-06-4, Platinum**, uses **24304-00-5**, Aluminum nitride
RL: CAT (Catalyst use); USES (Uses)
(in catalyst for synthesis of **hydrogen cyanide** from **ammonia** and **methane**)
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 24304-00-5 HCAPLUS
CN Aluminum nitride (AlN) (CA INDEX NAME)

N
|||
Al

L77 ANSWER 10 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1997:622664 HCAPLUS
DN 127:333049
TI Synthesis of methylamines from CO2, H2 and **NH3**. Catalytic behavior of various metal-alumina catalysts
AU Gredig, Silvia V.; Koeppel, Rene A.; Baiker, Alfons
CS Department of Chemical Engineering and Industrial Chemistry, Swiss Federal Institute of Technology, ETH-Zentrum, Zurich, CH-8092, Switz.
SO Applied Catalysis, A: General (1997), 162(1-2), 249-260
CODEN: ACAGE4; ISSN: 0926-860X
PB Elsevier
DT Journal
LA English
AB The synthesis of methylamines from CO2, H2 and **NH3** has been investigated over various metal-alumina catalysts (Cu, Ag, Ni, **Pt**, Co and Fe) prepared by copptn. Catalytic tests were carried out using a fixed-bed reactor in the temperature range 473-573 K and at 0.6 MPa total pressure. Among all metal catalysts highest methylamine production rates were obtained with the copper-alumina catalysts, affording a distribution of monomethylamine (MMA):dimethylamine (DMA):trimethylamine (TMA) of 72:15:13 at 513 K. Increasing the **ammonia** concentration in the feed resulted in improved selectivity to MMA. Byproducts observed over copper-alumina were carbon monoxide, originating from the reverse water gas shift reaction, and water. Ni, Co, Fe and **Pt** showed little methylamine production, but significant **methane** formation, whereas Ag produced only CO, H2O and HCN.
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23
IT Surface area
(of catalysts; synthesis of methylamines from carbon dioxide and hydrogen and **ammonia** in presence of various metal-alumina catalysts)

IT Catalysts
(synthesis of methylamines from carbon dioxide and hydrogen and **ammonia** in presence of various metal-alumina catalysts)
IT **74-82-8P, Methane**, preparation **74-90-8P, Hydrocyanic acid**, preparation 75-04-7P, Ethylamine, preparation 75-05-8P, Acetonitrile, preparation 630-08-0P, Carbon monoxide, preparation 7732-18-5P, Water, preparation
RL: **BYP (Byproduct)**; **PREP (Preparation)**
(byproduct; synthesis of methylamines from carbon dioxide and hydrogen and **ammonia** in presence of various metal-alumina catalysts)
IT **1344-28-1**, Alumina, uses 7439-89-6, Iron, uses 7440-02-0, Nickel, uses **7440-06-4, Platinum**, uses **7440-22-4**, Silver, uses 7440-48-4, Cobalt, uses **7440-50-8**, Copper, uses
RL: CAT (Catalyst use); USES (Uses)
(synthesis of methylamines from carbon dioxide and hydrogen and **ammonia** in presence of various metal-alumina catalysts)
IT 124-38-9, Carbon dioxide, reactions 1333-74-0, Hydrogen, reactions **7664-41-7, Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of methylamines from carbon dioxide and hydrogen and **ammonia** in presence of various metal-alumina catalysts)
IT 74-89-5P, Monomethylamine, preparation 75-50-3P, Trimethylamine, preparation 124-40-3P, Dimethylamine, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(synthesis of methylamines from carbon dioxide and hydrogen and **ammonia** in presence of various metal-alumina catalysts)
IT **74-82-8P, Methane**, preparation **74-90-8P, Hydrocyanic acid**, preparation
RL: **BYP (Byproduct)**; **PREP (Preparation)**
(byproduct; synthesis of methylamines from carbon dioxide and hydrogen and **ammonia** in presence of various metal-alumina catalysts)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

IT **1344-28-1**, Alumina, uses **7440-06-4, Platinum**, uses **7440-22-4**, Silver, uses **7440-50-8**, Copper, uses
RL: CAT (Catalyst use); USES (Uses)
(synthesis of methylamines from carbon dioxide and hydrogen and **ammonia** in presence of various metal-alumina catalysts)
RN 1344-28-1 HCAPLUS
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

IT **7664-41-7**, **Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of methylamines from carbon dioxide and hydrogen and **ammonia** in presence of various metal-alumina catalysts)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Baiker, A	1985	27	653	Catal Rev Sci Eng	HCAPLUS
Baiker, A	1993		91	Catalysis of Organic	
Baiker, A	1981	20	615	Ind Eng Chem Prod Re	HCAPLUS
Baiker, A	1983	22	217	Ind Eng Chem Prod Re	HCAPLUS
Baiker, A	1984	88	81	J Catal	HCAPLUS
Baiker, A	1988	41	283	Stud Surf Sci Catal	HCAPLUS
Baiker, A	1978	8	27	Synth Commun	HCAPLUS
Bartley, W	1981			US 4250116	HCAPLUS
Brown, P	1973			US 3726926	HCAPLUS
Chinchen, G	1988	36	1	Appl Catal	HCAPLUS
Darensbourg, D	1985	7	315	Rev Inorg Chem	HCAPLUS
Endes, E	1972			US 3336153	HCAPLUS
Fujita, S	1993	104	87	Appl Catal A	HCAPLUS
Gasser, D	1989	48	279	Appl Catal	HCAPLUS
Gredig, S	1996	29	339	Catal Today	HCAPLUS
Gredig, S	1995		73	J Chem Soc Chem Comm	HCAPLUS
Henrici-Olive, G	1978	4	379	J Mol Catal	HCAPLUS
Henrici-Olive, G	1984		170	The Chemistry of the	
Kim, K	1992	137	127	J Catal	HCAPLUS
Kliger, G	1988	111	418	J Catal	HCAPLUS
Koeppel, R	1991	63	59	Stud Surf Sci Catal	HCAPLUS
Kurtz, A	1969			US 3444203	HCAPLUS
Mills, G	1973	8	159	Catal Rev	HCAPLUS
Nozaki, K	1968			US 3410904	HCAPLUS
Radtke, F	1997	167	127	J Catal	HCAPLUS
Schild, C	1990	63	243	J Mol Catal	HCAPLUS
Schild, C	1991	95	6341	J Phys Chem	HCAPLUS

Tatsumi, T	1989	3	223	Catal Lett	HCAPLUS
Tomsett, A	1986	26	391	Appl Catal	HCAPLUS
van Gysel, A	1974	16		Ullmann's Encyclopad	
Vedage, G	1988		149	Catalysis of Organic	HCAPLUS
Voorhoeve, R	1976	45	297	J Catal	HCAPLUS
Voorhoeve, R	1978	200	759	Science	HCAPLUS

L77 ANSWER 11 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1994:152071 HCAPLUS
DN 120:152071
TI Application of microwave radiation for the synthesis of **hydrogen cyanide**
AU Wan, J. K. S.; Koch, T. A.
CS Dep. Chem., Queen's Univ., Kingston, ON, K7L 3N6, Can.
SO Research on Chemical Intermediates (**1994**), 20(1), 29-37
CODEN: RCINEE; ISSN: 0922-6168
DT Journal
LA English
AB Passing **NH3** over metal-containing DARCO pellets under microwave irradiation gave high conversions to HCN, with MeCN as a byproduct. Ru-DARCO was the most effective catalyst, with high conversion and minimal MeCN production The results have not been optimized for a high flow rate, as would be found in industry.
CC 78-2 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 23
ST **hydrogen cyanide** manuf; **ammonia** catalytic reaction metal DARCO
IT Microwave
(for conversion of **ammonia** to **hydrogen cyanide** over metal-containing DARCO pellets)
IT Charcoal
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(activated, metal-containing, as carbon source in microwave-induced preparation of **hydrogen cyanide**)
IT **74-82-8P**, **Methane**, preparation 75-05-8P, Acetonitrile, preparation
RL: PREP (Preparation)
(byproduct, in microwave-induced reaction of **ammonia** with metal-containing DARCO pellets)
IT 7440-02-0D, Nickel, DARCO-supported **7440-06-4D**, **Platinum**, DARCO-supported 7440-18-8D, Ruthenium, DARCO-supported **7440-33-7D**, Tungsten, DARCO-supported
RL: RCT (Reactant); RACT (Reactant or reagent)
(microwave-induced conversion of **ammonia** to **hydrogen cyanide** in the presence of)
IT **7664-41-7**, **Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(microwave-induced reaction of, with DARCO pellets containing metals, **hydrogen cyanide** from)
IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(preparation of, by microwave irradiation of **ammonia** stream over metal-containing DARCO pellets)
IT **74-82-8P**, **Methane**, preparation
RL: PREP (Preparation)
(byproduct, in microwave-induced reaction of **ammonia** with metal-containing DARCO pellets)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

IT **7440-06-4D, Platinum**, DARCO-supported **7440-33-7D**
, Tungsten, DARCO-supported
RL: RCT (Reactant); RACT (Reactant or reagent)
(microwave-induced conversion of **ammonia** to **hydrogen cyanide** in the presence of)
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-33-7 HCAPLUS
CN Tungsten (CA INDEX NAME)

W

IT **7664-41-7, Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(microwave-induced reaction of, with DARCO pellets containing metals, **hydrogen cyanide** from)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(preparation of, by microwave irradiation of **ammonia** stream over metal-containing DARCO pellets)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

CH

L77 ANSWER 12 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1993:110609 HCAPLUS
DN 118:110609
TI Low-pressure-drop, high-surface-area oxidation catalyst and catalyst for production of **hydrocyanic acid**
IN Hochella, William A.; Heffernen, Steven A.
PA Johnson Matthey PLC, UK
SO Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW
DT **Patent**
LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 519699	A1	19921223	EP 1992-305544	19920617 <--
	EP 519699	B1	19950125		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, PT, SE				
	US 5160722	A	19921103	US 1991-716539	19910617 <--
	US 5356603	A	19941018	US 1993-9348	19930126 <--
PRAI	US 1991-716539	A	19910617 <--		
	US 1991-716540	A	19910617 <--		

AB This invention is a catalytic element for use in the catalytic oxidation of **NH3** on **NH3** and **CH4**. The element comprises a foraminous structure fabricated from a material consisting essentially of a metal selected from **Pt**, Rh, Pd and alloys of mixts. thereof characterized by a novel configuration whereby the initial product of the formula curve to flat ratio (C/F) multiplied by mesh count (N) and wire diameter (dw), for said element is .gtorsim.0.08 and where, for a given throughput, the conversion efficiency is a function of the curve to flat ratio (C/F), wire diameter (dw), and mesh count (N) combination and conversion efficiency is improved by increasing the mesh count (N) for a given wire diameter, increasing the wire diameter (dw) for a given mesh count, and increasing the curve to flat ratio (C/F) to >1.0.

IC ICM B01J0035-06
ICS C01B0021-26

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 45, 49

ST **ammonia** oxidn catalyst; **methane ammonia** oxidn catalyst; **hydrocyanic acid** manuf catalyst; **platinum** catalyst **ammonia** oxidn; rhodium catalyst **ammonia** oxidn; palladium catalyst **ammonia** oxidn

IT Oxidation catalysts
(low-pressure-drop high-surface-area metal alloy, for **hydrocyanic acid** manufacture)

IT Cobalt alloy, nonbase
Copper alloy, nonbase
Gold alloy, nonbase
Iridium alloy, nonbase
Nickel alloy, nonbase
Palladium alloy, nonbase
Platinum alloy, nonbase
Rhodium alloy, nonbase
Ruthenium alloy, nonbase
Silver alloy, nonbase
RL: CAT (Catalyst use); USES (Uses)
(catalysts containing, for **ammonia** and **ammonia/methane** oxidation, for **hydrocyanic acid** manufacture)

IT **7440-05-3**, Palladium, uses **7440-06-4**, **Platinum**, uses 7440-16-6, Rhodium, uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts containing, for **ammonia** and **ammonia/methane** oxidation, for **hydrocyanic acid** manufacture)

IT **74-90-8P**, **Hydrocyanic acid**, preparation
RL: **PREP (Preparation)**
(manufacture of, low-pressure-drop high-surface-area metal catalysts for)

IT **74-82-8**, **Methane**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of **ammonia** and, low-pressure-drop high-surface-area metal alloy catalysts for)

IT **7664-41-7, Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, low-pressure-drop high-surface-area metal alloy catalysts for)
IT **7440-05-3**, Palladium, uses **7440-06-4, Platinum**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts containing, for **ammonia** and **ammonia/methane** oxidation, for **hydrocyanic acid** manufacture)
RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **74-90-8P, Hydrocyanic acid**, preparation
RL: **PREP (Preparation)**
(manufacture of, low-pressure-drop high-surface-area metal catalysts for)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

N
|||
CH

IT **74-82-8, Methane**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of **ammonia** and, low-pressure-drop high-surface-area metal alloy catalysts for)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

IT **7664-41-7, Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, low-pressure-drop high-surface-area metal alloy catalysts for)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

L77 ANSWER 13 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1993:38318 HCAPLUS
DN 118:38318
TI Hydrodecyanation
AU Weigert, Frank J.; Moguel, Michael
CS Cent. Res. Dev. Dep., E. I. Du Pont de Nemours and Co., Wilmington, DE, 19880, USA
SO Journal of Molecular Catalysis (1992), 75(2), 209-18
CODEN: JMCADS; ISSN: 0304-5102
DT Journal
LA English
OS CASREACT 118:38318
AB Nitriles such as PhCN and MeCN react with H2 over a variety of catalysts to form HCN and hydrocarbons. The preferred catalyst to convert PhCN to C6H6 and HCN is 1% Pd/SiO2. The selectivity is essentially 100% at 30% conversion at 725 K. The major side-reaction with inferior catalysts is hydrogenolysis to PhMe and **NH3**. HCN yields increase with nonacidic supports and higher operating temperature
CC 22-7 (Physical Organic Chemistry)
Section cross-reference(s): 67
IT 1314-13-2, Zinc oxide, uses 7439-88-5, Iridium, uses **7440-05-3**, Palladium, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst containing, for hydrodecyanation of nitriles)
IT 1308-38-9, Dichromium trioxide, uses 1309-48-4, Magnesia, uses **1344-28-1**, Alumina, uses 1344-43-0, Manganese monoxide, uses **7440-06-4**, **Platinum**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst, for hydrodecyanation of nitriles)
IT 74-89-5, Methylamine, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(conversion of, to **hydrogen cyanide** and dihydrogen, thermodn. of)
IT **74-90-8**
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyanation, retro, hydro-, of nitriles, mechanism and thermodn. of)
IT 108-88-3P, Toluene, preparation **7664-41-7P**, **Ammonia**, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, as byproduct in catalytic hydrodecyanation of benzonitrile)
IT 71-43-2P, Benzene, preparation **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation); PREP (Preparation)**
(preparation of, from catalytic hydrodecyanation of benzonitrile)
IT **74-82-8P**, **Methane**, reactions
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, in catalytic hydrodecyanation of acetonitrile)
IT **7440-05-3**, Palladium, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst containing, for hydrodecyanation of nitriles)
RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

IT **1344-28-1**, Alumina, uses **7440-06-4**, **Platinum**, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst, for hydrodecyanation of nitriles)

RN 1344-28-1 HCAPLUS
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **74-90-8**
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyanation, retro, hydro-, of nitriles, mechanism and thermodn. of)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

IT **7664-41-7P, Ammonia**, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, as byproduct in catalytic hydrodecyanation of benzonitrile)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation); PREP (Preparation)**
(preparation of, from catalytic hydrodecyanation of benzonitrile)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

IT **74-82-8P, Methane**, reactions
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, in catalytic hydrodecyanation of acetonitrile)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

L77 ANSWER 14 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1992:182418 HCAPLUS
DN 116:182418
TI Improvements in or relating to catalysts and getter systems

IN Heywood, Alan Edward
PA UK
SO PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9202301	A1	19920220	WO 1991-GB1293	19910730 <--
	W: AT, AU, BB, BG, BR, CA, CH, CS, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MC, MG, MN, MW, NL, NO, PL, RO, SD, SE, SU, US				
	RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FR, GA, GB, GN, GR, IT, LU, ML, MR, NL, SE, SN, TD, TG				
	CA 2088150	A1	19920201	CA 1991-2088150	19910730 <--
	AU 9183264	A	19920302	AU 1991-83264	19910730 <--
	AU 661971	B2	19950817		
	EP 544710	A1	19930609	EP 1991-914313	19910730 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
	JP 06503744	T	19940428	JP 1991-513949	19910730 <--
	ZA 9106028	A	19920527	ZA 1991-6028	19910731 <--
	IN 177336	A1	19970104	IN 1991-CA571	19910731 <--
	IN 177596	A1	19970208	IN 1991-CA570	19910731 <--
	NO 9300335	A	19930129	NO 1993-335	19930129 <--
PRAI	GB 1990-16787	A	19900731 <--		
	WO 1991-GB1293	A	19910730 <--		

AB Knitted precious metal textiles such as wire gauzes, and methods of making the same, are disclosed. The textiles are suitable for use in catalysis, and are especially useful for the catalytic processing of **NH3**. Particularly preferred knitting stitches are tricot, jacquard, and raschel. Rotary or circular knitting machines may be used, but warp knitting machines are preferred for most applications. Advantageous products produced by the knitting process are described. These products include layers of nonuniform thickness, and uncut products having non-parallel side edges, such as circles. Application to HCN production is claimed.

IC ICM B01J0035-06
ICS **C01C0003-02**
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 46, 49
ST salt gettering catalyst precious metal textile; **hydrogen cyanide** manuf catalyst
IT Getters
(self-, catalyst, for **hydrogen cyanide** manufacture)
IT Wire cloth
(self-gettering catalyst, for **hydrogen cyanide** manufacture)
IT Catalysts and Catalysis
(self-gettering, knitted textiles from precious metal wires, for **hydrogen cyanide** manufacture)
IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **PREP (Preparation)**
(manufacture of, self-gettering catalyst for)
IT **74-82-8P, Methane**, reactions
RL: RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(reaction of, with **ammonia**, for **hydrogen cyanide** manufacture, self-gettering catalyst for)
IT **7664-41-7P, Ammonia**, reactions
RL: RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or

reagent)
(reaction of, with **methane**, for **hydrogen cyanide** manufacture, self-gettering catalyst for)

IT **7440-05-3**, Palladium, uses **7440-06-4**, **Platinum**, uses **77981-46-5**
RL: USES (Uses)
(self-gettering catalyst containing, for **hydrogen cyanide** manufacture)

IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **PREP (Preparation)**
(manufacture of, self-gettering catalyst for)

RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

IT **74-82-8P**, **Methane**, reactions
RL: RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(reaction of, with **ammonia**, for **hydrogen cyanide** manufacture, self-gettering catalyst for)

RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

IT **7664-41-7P**, **Ammonia**, reactions
RL: RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(reaction of, with **methane**, for **hydrogen cyanide** manufacture, self-gettering catalyst for)

RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

IT **7440-05-3**, Palladium, uses **7440-06-4**, **Platinum**, uses **77981-46-5**
RL: USES (Uses)
(self-gettering catalyst containing, for **hydrogen cyanide** manufacture)

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 77981-46-5 HCAPLUS
CN Platinum alloy, base, Pt 90,Pd 5,Rh 5 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	90	7440-06-4
Pd	5	7440-05-3
Rh	5	7440-16-6

L77 ANSWER 15 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1991:125365 HCAPLUS
DN 114:125365
TI Process for coating alumina reaction tubes for the manufacture of **hydrogen cyanide** with a catalytically active layer
IN Hecht, Christian; Panster, Peter; Bittner, Friedrich; Look-Herber, Petra
PA Degussa A.-G., Germany
SO Eur. Pat. Appl., 10 pp.
CODEN: EPXXDW
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 407809	A1	19910116	EP 1990-112178	19900627 <--
	EP 407809	B1	19930505		
	R: BE, CH, DE, FR, GB, LI				
	DE 3923034	A1	19910207	DE 1989-3923034	19890713 <--
	DE 3923034	C2	19910711		
	US 5039643	A	19910813	US 1990-550746	19900710 <--
PRAI	DE 1989-3923034	A	19890713 <--		

AB The process comprises wetting the tubes with a suspension of **Pt** and Al particles (**Pt**/Al atomic ratio 0.001-1:1) having diameter <100 μm. The carrier liquid is then evaporated, and the tubes are slowly heated in the presence of N and/or **NH3** under exclusion of the hydrocarbon reactants used in the **BMA** process. Al2O3 tubes were internally coated with a suspension of **Pt** black and Al paste in EtOH (**Pt**/Al atomic ratio 0.1:1). The Al paste contained 50 weight% Al, .apprx.30 weight% Cu-containing Pb borosilicate, a very small amount of polymeric binder, and xylene. The coated tubes were heated in **NH3** to 1250-1300° for 13 h, after which **NH3** (31 mol/h) and **CH4** (29 mol/h) were introduced. No coking was observed in 20 days, and the HCN yield (based on **CH4**) was 85%.
IC ICM **C01C0003-02**
ICS B01J0027-24; B01J0023-40; B01J0037-02
CC 49-2 (Industrial Inorganic Chemicals)
ST alumina tube coating **platinum** aluminum; **hydrogen cyanide platinum** aluminum catalyst; **ammonia methane hydrogen cyanide**; ethanol **platinum** black aluminum paste; copper lead borosilicate aluminum paste; xylene polymer binder aluminum paste
IT Frits
Alkaline earth metals
Borates
Rare earth metals, uses and miscellaneous
Silicates, uses and miscellaneous

RL: **PREP (Preparation)**
(powdered, catalyst suspensions containing **platinum** black and aluminum and, for **hydrogen cyanide** manufacture from **ammonia** and **methane**)

IT 25608-33-7P, Butyl methacrylate-methyl methacrylate copolymer
RL: **PREP (Preparation)**
(binders, catalyst suspensions containing **platinum** black and aluminum and, for **hydrogen cyanide** manufacture from **ammonia** and **methane**)

IT 7631-86-9, Silica, uses and miscellaneous
RL: USES (Uses)
(catalyst suspensions containing **platinum** black and aluminum and, for **hydrogen cyanide** manufacture from **ammonia** and **methane**)

IT **7440-06-4P, Platinum**, uses and miscellaneous
RL: **PREP (Preparation)**; USES (Uses)
(catalysts containing aluminum and, coating of, on alumina reaction tubes, for **hydrogen cyanide** manufacture from **ammonia** and **methane**)

IT **7429-90-5P**, Aluminum, uses and miscellaneous
RL: **PREP (Preparation)**; USES (Uses)
(catalysts containing **platinum** black and, coating of, on alumina reaction tubes for **hydrogen cyanide** manufacture from **ammonia** and **methane**)

IT 56939-15-2P, Lead borosilicate **7439-95-4P**, Magnesium, uses and miscellaneous 7440-02-0P, Nickel, uses and miscellaneous **7440-50-8P**, Copper, uses and miscellaneous
RL: **PREP (Preparation)**
(powdered, catalyst suspensions containing **platinum** black and aluminum and, for **hydrogen cyanide** manufacture from **ammonia** and **methane**)

IT **1344-28-1P**, Alumina, uses and miscellaneous
RL: **PREP (Preparation)**; USES (Uses)
(tubes, coating of, with **platinum** black-aluminum catalyst, for **hydrogen cyanide** manufacture from **ammonia** and **methane**)

IT **7440-06-4P, Platinum**, uses and miscellaneous
RL: **PREP (Preparation)**; USES (Uses)
(catalysts containing aluminum and, coating of, on alumina reaction tubes, for **hydrogen cyanide** manufacture from **ammonia** and **methane**)

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **7429-90-5P**, Aluminum, uses and miscellaneous
RL: **PREP (Preparation)**; USES (Uses)
(catalysts containing **platinum** black and, coating of, on alumina reaction tubes for **hydrogen cyanide** manufacture from **ammonia** and **methane**)

RN 7429-90-5 HCAPLUS
CN Aluminum (CA INDEX NAME)

Al

IT **7439-95-4P**, Magnesium, uses and miscellaneous **7440-50-8P**
, Copper, uses and miscellaneous
RL: **PREP (Preparation)**; USES (Uses)
(powdered, catalyst suspensions containing **platinum** black and aluminum and, for **hydrogen cyanide** manufacture from **ammonia** and **methane**)
RN 7439-95-4 HCAPLUS
CN Magnesium (CA INDEX NAME)

Mg

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

IT **1344-28-1P**, Alumina, uses and miscellaneous
RL: **PREP (Preparation)**; USES (Uses)
(tubes, coating of, with **platinum** black-aluminum catalyst, for **hydrogen cyanide** manufacture from **ammonia** and **methane**)
RN 1344-28-1 HCAPLUS
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L77 ANSWER 16 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1989:138108 HCAPLUS
DN 110:138108
TI Manufacture of **hydrocyanic acid** from C1-4-**aliphatic hydrocarbons** and **ammonia** in the presence of a catalyst
IN Witzel, Michael; Kleinschmit, Peter; Pfeifer, Wolf Dieter; Voigt, Carl; Albers, Peter
PA Degussa A.-G., Fed. Rep. Ger.
SO Eur. Pat. Appl., 5 pp.
CODEN: EPXXDW
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 299175	A1	19890118	EP 1988-108299	19880525 <--
	EP 299175	B1	19920304		
	R: AT, BE, CH, DE, ES, FR, GB, IT, LI, NL				
	DE 3723535	A1	19890126	DE 1987-3723535	19870716 <--
	DE 3723535	C2	19930826		
	AT 73111	T	19920315	AT 1988-108299	19880525 <--
	ES 2033370	T3	19930316	ES 1988-108299	19880525 <--
	ZA 8803833	A	19890222	ZA 1988-3833	19880527 <--
	BR 8803516	A	19890208	BR 1988-3516	19880713 <--
	JP 01037414	A	19890208	JP 1988-172823	19880713 <--
	AU 8819041	A	19890119	AU 1988-19041	19880714 <--
	AU 596900	B2	19900517		
	US 4961914	A	19901009	US 1988-218858	19880714 <--
PRAI	DE 1987-3723535	A	19870716 <--		

EP 1988-108299 A 19880525 <--
OS CASREACT 110:138108
AB In the title process, an Al2O3 catalyst precursor is prepared by depositing Al ions and a very small amount of noble metal ions, preferably **Pt** ions, from a solution on the surface of the Al2O3 particles, drying the precursor and reducing the precursor with H, and feeding the precursor with the HCN to a synthesis reactor. The reactor is then heated to 1000-1350°, a mixture of **NH3** and the hydrocarbon is fed into the reactor, the precursor initiates the reaction, and, after a short induction period, the reaction is sustained by the resulting AlN layer that is formed on the Al2O3. These catalysts have a longer life than the prior art Al2O3 catalysts. Thus, 6 g H2PtCl6·6H2O and 27.97 g AlCl3 were dissolved in 50 mL H2O, and the solution was added to 44 g moist Al2O3 pellets. The solvent was evaporated by vacuum evaporation, and the coated pellets were dried in N at 200°, and reduced with H (at 40 L/h) at 800°. Using 5 g catalyst per 40 g Al2O3 (surface area 1120 cm2/g), **CH4** flow 1 and **NH3** flow 1.1 mol/h at 1250-1300°, a yield of 92% (based on **CH4**) HCN was obtained in 5 days.
IC ICM **C01C0003-02**
CC 49-2 (Industrial Inorganic Chemicals)
ST **hydrocyanic acid** manuf hydrocarbon **ammonia**; **ammonia methane** reaction alumina catalyst; **platinum** aluminum redn alumina catalyst
IT Hydrocyanation catalysts
(on alumina support, in **hydrocyanic acid** manufacture from **ammonia** and **methane**)
IT Hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(C1-4, reaction of, with **ammonia**, for **hydrocyanic acid**, catalyst for)
IT **1344-28-1**, Alumina, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst supports, in catalytic **hydrocyanic acid** manufacture from **ammonia** and **methane**)
IT **24304-00-5P**, Aluminum nitride
RL: FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, on alumina, in **hydrocyanic acid** manufacture)
IT **74-90-8P**, **Hydrocyanic acid**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, from **ammonia** and hydrocarbons, catalyst for)
IT **74-82-8**, **Methane**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **ammonia**, for **hydrocyanic acid**, catalyst for)
IT **7664-41-7**, **Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with hydrocarbons, for **hydrocyanic acid**, catalyst for)
IT 7446-70-0, Aluminum chloride, reactions 10043-01-3, Aluminum sulfate 13473-90-0, Aluminum nitrate **16941-12-1**, Hexachloroplatinic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(reduction of, on alumina, in **hydrocyanic acid** manufacture)
IT **1344-28-1**, Alumina, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst supports, in catalytic **hydrocyanic acid** manufacture from **ammonia** and **methane**)
RN 1344-28-1 HCAPLUS
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **24304-00-5P**, Aluminum nitride
RL: FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, on alumina, in **hydrocyanic acid** manufacture)
RN 24304-00-5 HCAPLUS
CN Aluminum nitride (AlN) (CA INDEX NAME)

IT **74-90-8P**, **Hydrocyanic acid**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, from **ammonia** and hydrocarbons, catalyst for)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

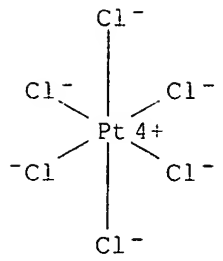
IT **74-82-8**, **Methane**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **ammonia**, for **hydrocyanic acid**, catalyst for)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

IT **7664-41-7**, **Ammonia**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with hydrocarbons, for **hydrocyanic acid**, catalyst for)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

IT **16941-12-1**, Hexachloroplatinic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(reduction of, on alumina, in **hydrocyanic acid** manufacture)
RN 16941-12-1 HCAPLUS
CN Platinate(2-), hexachloro-, hydrogen (1:2), (OC-6-11)- (CA INDEX NAME)

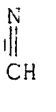


●2 H^+

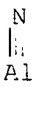
L77 ANSWER 17 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1984:493656 HCAPLUS
DN 101:93656
OREF 101:14335a,14338a
TI **Hydrogen cyanide** synthesis catalyzed by alumina in the presence of hydrogen sulfide under simultaneous formation of aluminum nitride
AU Hillebrand, Wolfgang A.
CS Bergbau-Forsch. G.m.b.H., Essen, 4300/13, Fed. Rep. Ger.
SO Industrial & Engineering Chemistry Product Research and Development (**1984**), 23(3), 476-9
CODEN: IEPRA6; ISSN: 0196-4321
DT Journal
LA English
AB The alumina-catalyzed HCN formation from **CH4** and **NH3** is increased 4-fold when 10 volume% H2S is added. Effecting an HCN yield of 80% (based on **NH3** feed), the catalyst system provides an activity similar to that of **Pt**/Al2O3. More than inhibiting coke formation, H2S brings about a complete conversion of Al2O3 to AlN, which in turn promotes further the conversion of **NH3** and **CH4**. The system offers a new route to the production of HCN from coke oven and refinery sour gases. Possibly there are still more applications of AlN as a catalyst.
CC 49-10 (Industrial Inorganic Chemicals)
ST alumina catalyst; hydrogen sulfide reaction; **hydrocyanic acid** prepn; **ammonia methane** reaction; aluminum nitride prepn catalyst
IT Catalysts and Catalysis
(aluminum oxide, for **ammonia** reaction with **methane** in presence of hydrogen sulfide)
IT 7783-06-4, uses and miscellaneous
RL: USES (Uses)
(**ammonia** reaction with **methane** in presence of, alumina catalysts for)
IT **1344-28-1**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for **ammonia** reaction with **methane** in presence of hydrogen sulfide)
IT **74-90-8P**, preparation
RL: **PREP (Preparation)**
(preparation of, from **ammonia** and **methane**, in presence of hydrogen sulfide-alumina catalysts)

IT **24304-00-5P**
RL: PREP (Preparation)
(preparation of, in **ammonia** reaction with **methane** in presence of hydrogen sulfide and aluminum oxide catalysts)
IT **74-82-8**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **ammonia**, in presence of hydrogen sulfide, alumina catalysts for)
IT **7664-41-7**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **methane** in presence of hydrogen sulfide, alumina catalysts for)
IT **1344-28-1**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for **ammonia** reaction with **methane** in presence of hydrogen sulfide)
RN 1344-28-1 HCAPLUS
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **74-90-8P**, preparation
RL: **PREP (Preparation)**
(preparation of, from **ammonia** and **methane**, in presence of hydrogen sulfide-alumina catalysts)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)



IT **24304-00-5P**
RL: PREP (Preparation)
(preparation of, in **ammonia** reaction with **methane** in presence of hydrogen sulfide and aluminum oxide catalysts)
RN 24304-00-5 HCAPLUS
CN Aluminum nitride (AlN) (CA INDEX NAME)



IT **74-82-8**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **ammonia**, in presence of hydrogen sulfide, alumina catalysts for)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

IT **7664-41-7**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **methane** in presence of hydrogen sulfide,

alumina catalysts for)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

L77 ANSWER 18 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1983:455791 HCAPLUS
DN 99:55791
OREF 99:8689a,8692a
TI **Hydrogen cyanide**
IN Voigt, Carl; Kleinschmit, Peter
PA **Degussa A.-G., Fed. Rep. Ger.**
SO Eur. Pat. Appl., 14 pp.
CODEN: EPXXDW
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 72416	A2	19830223	EP 1982-105800	19820630 <--
	EP 72416	A3	19830727		
	EP 72416	B1	19850403		
	R: AT, BE, CH, DE, FR, GB, IT, LI, NL				
	DE 3132723	A1	19830317	DE 1981-3132723	19810819 <--
	ES 512847	A1	19830301	ES 1982-512847	19820604 <--
	AT 12481	T	19850415	AT 1982-105800	19820630 <--
	ZA 8204948	A	19830427	ZA 1982-4948	19820712 <--
	JP 58032014	A	19830224	JP 1982-131343	19820729 <--
	RO 86700	B3	19850417	RO 1982-108467	19820817 <--
	BR 8204821	A	19830802	BR 1982-4821	19820818 <--
PRAI	DE 1981-3132723	A	19810819 <--		
	EP 1982-105800	A	19820630 <--		

AB HCN is manufacture by: (1) decomposition of MeOH to a CO-H2 mixture at 150-600° and 1-100 bar in the presence of a CuO-ZnO-Cr2O3 catalyst; (2) establishing a CO/H2 ratio of 1:(2.5-3) by the addition of H2 to the mixture; (3) conversion of the CO-H2 mixture into **CH4** and H2O in the presence of a NiO catalyst on an Al2O3, SiO2, or TiO2 support; (4) removal of H2O by cooling to 10°; and (5) conversion of the H2O-free **CH4** with **NH3** to HCN in the presence of a **Pt** catalyst. The optimum MeOH decomposition and **CH4** synthesis temperature providing a 87.01% yield of HCN was 450°.
IC **C01C0003-02**
CC 49-2 (Industrial Inorganic Chemicals)
ST **hydrogen cyanide** manuf methanol **ammonia**
IT Catalysts and Catalysis
(for **hydrogen cyanide** manufacture from methanol)
IT 1333-74-0P, reactions
RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(conversion of mixture of carbon monoxide and, to **methane** for hydrogen cyanie manufacture, nickel oxide catalysts in)
IT 630-08-0P, reactions
RL: RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(conversion of mixture of hydrogen and, to **methane** for **hydrogen cyanide** manufacture, nickel oxide catalysts in)
IT **74-82-8**, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(conversion of, with **ammonia** to **hydrogen cyanide**, **platinum** catalysts for)
IT 67-56-1P, reactions
RL: RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(decomposition of, to carbon monoxide and hydrogen for **hydrogen cyanide** manufacture, copper oxide-zinc oxide-chromium oxide catalysts in)
IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, from methanol)
IT **74-82-8**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(conversion of, with **ammonia** to **hydrogen cyanide**, **platinum** catalysts for)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, from methanol)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

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L77 ANSWER 19 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1982:425827 HCAPLUS
DN 97:25827
OREF 97:4499a,4502a
TI **Hydrogen cyanide**
IN Voigt, Carl; Kleinschmidt, Peter; Schreyer, Gerd; Sperka, Gerhard
PA **Degussa A.-G., Fed. Rep. Ger.**
SO Ger., 5 pp.
CODEN: GWXXAW
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	DE 3036599	C1	19820325	DE 1980-3036599	19800927	<--
	EP 48800	A1	19820407	EP 1981-105855	19810724	<--
	EP 48800	B1	19850130			
	R: AT, BE, CH, DE, FR, GB, IT, NL, SE					
	AT 11521	T	19850215	AT 1981-105855	19810724	<--
	BR 8104922	A	19820831	BR 1981-4922	19810730	<--
	US 4387081	A	19830607	US 1981-304049	19810921	<--
	ZA 8106619	A	19820929	ZA 1981-6619	19810923	<--
	AU 8175672	A	19820408	AU 1981-75672	19810925	<--
	JP 57092516	A	19820609	JP 1981-150827	19810925	<--

PRAI DE 1980-3036599 A 19800927 <--
EP 1981-105855 A 19810724 <--
OS MARPAT 97:25827
AB HCN is produced from aliphatic C2-4 alcs. and **NH3** in **Pt** -coated ceramic tubes in the HCN-**CH4**-**NH3** process by maintaining a C:N ratio of 0.8-2:1 and introducing ≥1 mol H/mol N. The process produces a combustible gas mixture which is used to heat the reactor tubes. Thus, EtOH and **NH3** in a C:N ratio of 1.95 and H 1 mol/mol N were reacted for 5.0 h to produce HCN at 91.17% efficiency (based on C input) and a waste gas 344.8 L containing H 79.5, **CH4** 0.1, and CO 19.9 volume% without formation of soot.
IC **C01C0003-02**
CC 49-2 (Industrial Inorganic Chemicals)
ST **hydrogen cyanide** synthesis ethanol energy
IT Fuel gas manufacturing
(byproduct, in **hydrocyanic acid** manufacture from **ammonia** and C2-4 alcs.)
IT Alcohols, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(C2-4, reactions of, with **ammonia**, for **hydrocyanic acid** manufacture with byproduct fuel gas formation)
IT 630-08-0P, preparation
RL: FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in **hydrocyanic acid** manufacture from **ammonia** and C2-4 alcs.)
IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, from C2-4 alcs. and **ammonia**, for fuel gas byproduct manufacture)
IT 1333-74-0, uses and miscellaneous
RL: USES (Uses)
(reactions of **ammonia** and C2-4 alcs. in presence of, for **hydrocyanic acid** manufacture, with fuel gas byproduct formation)
IT **7664-41-7**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactions of, with C2-4 alcs., for **hydrocyanic acid** manufacture with byproduct fuel gas formation)
IT 64-17-5, reactions 67-63-0, reactions 78-83-1, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactions of, with **ammonia**, for hydrocyanic manufacture with fuel gas byproduct formation)
IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, from C2-4 alcs. and **ammonia**, for fuel gas byproduct manufacture)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

IT **7664-41-7**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactions of, with C2-4 alcs., for **hydrocyanic acid** manufacture with byproduct fuel gas formation)
RN 7664-41-7 HCAPLUS

CN Ammonia (CA INDEX NAME)

NH_3

L77 ANSWER 20 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1981:464514 HCAPLUS
DN 95:64514
OREF 95:10875a,10878a
TI **Hydrogen cyanide**
IN Bittner, Friedrich; Voigt, Carl; Kleinschmit, Peter
PA **Degussa, Fed. Rep. Ger.**
SO Ger. Offen., 10 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2936844	A1	19810402	DE 1979-2936844	19790912 <--
	BE 885175	A1	19810310	BE 1980-47264	19800910 <--
	ZA 8005595	A	19810930	ZA 1980-5595	19800910 <--
	BR 8005813	A	19810324	BR 1980-5813	19800911 <--
	CH 644331	A5	19840731	CH 1980-6853	19800911 <--
PRAI	DE 1979-2936844	A	19790912 <--		

AB HCN is made from **NH3** and short-chain **aliphatic hydrocarbons**, preferably **CH4**, in hanging reaction tubes of sintered Al2O3 lined with a **Pt** catalyst and heated to 1300°. The product is cooled rapidly to 300-400°. The gas mixture is passed through the tubes in nonlaminar flow with Reynolds number >2300 starting 15 tube diams. from the inlet. Internal fittings or packing material are provided to ensure nonlaminar flow. These are partially or totally coated with the catalyst. Arrangements can be made for the gas-flow itself to maintain a fluidized bed of heat- and abrasion-resistant material. With the usual starting materials and reacting gas mixture, while maintaining a throughput of >2 mol **CH4** per tube per h, a yield of > 95% based on the **NH3** can be obtained.

IC **C01C0003-02**
CC 49-2 (Industrial Inorganic Chemicals)
ST **hydrogen cyanide** manuf; **ammonia methane** reaction
IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture); PREP (Preparation)**
(manufacture of, by **ammonia-methane** reaction)
IT **74-82-8**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **ammonia**)
IT **7664-41-7**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **methane**)
IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture); PREP (Preparation)**
(manufacture of, by **ammonia-methane** reaction)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

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IT **74-82-8**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **ammonia**)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

IT **7664-41-7**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **methane**)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

L77 ANSWER 21 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1981:409383 HCAPLUS
DN 95:9383
OREF 95:1729a,1732a
TI Device and methods for **hydrogen cyanide**
IN Bittner, Friedrich; Voigt, Carl; Kleinschmitt, Peter
PA **Degussa, Fed. Rep. Ger.**
SO Ger. Offen., 15 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2935784	A1	19810312	DE 1979-2935784	19790905 <--
	DE 2935784	C2	19830217		
	NL 8003833	A	19810309	NL 1980-3833	19800702 <--
	IL 60603	A	19831230	IL 1980-60603	19800715 <--
	ES 493419	A1	19810516	ES 1980-493419	19800716 <--
	FR 2464228	A1	19810306	FR 1980-16531	19800725 <--
	FR 2464228	B1	19840106		
	CS 223811	B2	19831125	CS 1980-5440	19800806 <--
	RO 84538	A1	19840621	RO 1980-101983	19800815 <--
	GB 2058032	A	19810408	GB 1980-28061	19800829 <--
	GB 2058032	B	19830223		
	DD 153805	A5	19820203	DD 1980-223644	19800901 <--
	BE 885047	A1	19810302	BE 1980-47257	19800902 <--
	BR 8005576	A	19810317	BR 1980-5576	19800902 <--
	SE 8006150	A	19810306	SE 1980-6150	19800903 <--
	SE 439004	B	19850528		
	SE 439004	C	19850905		
	US 4320104	A	19820316	US 1980-183955	19800903 <--
	CA 1146719	A1	19830524	CA 1980-359752	19800903 <--
	AT 8004455	A	19811015	AT 1980-4455	19800904 <--

	AT 366985	B	19820525		
	PL 123211	B1	19820930	PL 1980-226580	19800904 <--
	CH 644086	A5	19840713	CH 1980-6660	19800904 <--
	JP 56054224	A	19810514	JP 1980-122500	19800905 <--
	ZA 8005494	A	19810826	ZA 1980-5494	19800905 <--
PRAI	DE 1979-2935784	A	19790905 <--		

AB In the manufacture of HCN by the HCN-**NH3-CH4** method the yield of the acid is improved by increasing the flow rate of the gas mixture into the Pt clad ceramic tube and by changing the locations of the input jets.

IC **C01C0003-02**

CC 49-2 (Industrial Inorganic Chemicals)

ST **hydrocyanic acid** manuf; **ammonia** **methane** reaction

IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, method for)

IT **74-82-8**, properties
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **ammonia**)

IT **7664-41-7**, properties
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **methane**)

IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, method for)

RN 74-90-8 HCAPLUS

CN Hydrocyanic acid (CA INDEX NAME)

IT **74-82-8**, properties
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **ammonia**)

RN 74-82-8 HCAPLUS

CN Methane (CA INDEX NAME)

IT **7664-41-7**, properties
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **methane**)

RN 7664-41-7 HCAPLUS

CN Ammonia (CA INDEX NAME)

L77 ANSWER 22 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1981:49678 HCAPLUS

DN 94:49678

OREF 94:8097a,8100a

TI **Hydrogen cyanide**
IN Voigt, Carl; Kleinschrit, Peter
PA **Degussa, Fed. Rep. Ger.**
SO Ger. Offen., 11 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	DE 2913925	A1	19801023	DE 1979-2913925	19790406	<--
	DE 2913925	C2	19820603			
	NL 8000406	A	19801008	NL 1980-406	19800122	<--
	NL 188687	B	19920401			
	NL 188687	C	19920901			
	ES 488100	A1	19800916	ES 1980-488100	19800131	<--
	BR 8000917	A	19801029	BR 1980-917	19800214	<--
	GB 2046233	A	19801112	GB 1980-6804	19800228	<--
	GB 2046233	B	19830126			
	CS 211369	B2	19820226	CS 1980-2185	19800308	<--
	FR 2453108	A1	19801031	FR 1980-5334	19800310	<--
	FR 2453108	B1	19840106			
	IL 59597	A	19831130	IL 1980-59597	19800312	<--
	SU 952099	A3	19820815	SU 1980-2893652	19800318	<--
	US 4289741	A	19810915	US 1980-133358	19800324	<--
	DD 149654	A5	19810722	DD 1980-219947	19800326	<--
	ZA 8001915	A	19810325	ZA 1980-1915	19800331	<--
	BE 882642	A1	19801003	BE 1980-47124	19800403	<--
	SE 8002596	A	19801007	SE 1980-2596	19800403	<--
	SE 438845	B	19850513			
	SE 438845	C	19850822			
	CA 1134593	A1	19821102	CA 1980-349208	19800403	<--
	CH 645600	A5	19841015	CH 1980-2634	19800403	<--
	AT 8001873	A	19811115	AT 1980-1873	19800404	<--
	AT 367375	B	19820625			
	PL 124280	B1	19830131	PL 1980-223260	19800404	<--
	RO 79837	A1	19830201	RO 1980-100729	19800404	<--
	JP 55149123	A	19801120	JP 1980-44767	19800407	<--
	JP 62061534	B	19871222			
PRAI	DE 1979-2913925	A	19790406	<--		

AB HCN is manufactured by a modification of the known reaction of **NH3** and **CH4** in which the **CH4** is replaced by propane, n- or isobutane, or a mixture of these, such that the C:N:H ratio is 1:1:7.1 to 1:1.33:13 at the beginning of the reaction, with HCN being recovered from the reaction products and the H-containing residual gas being partly recycled. Thus, reaction of a C3H8:**NH3**:H2 mol ratio 1:3:3:6 mixture (C:N:H atomic ratio 1:1.1:10) in a **Pt**-coated reaction tube at 1300° and 1 bar, followed by cooling to between 30 and 400°, gave a yield of 87 mol. based on propane, 80 mol% based on **NH3**. **NH3** and HCN were removed from the residual gas with H2SO4 and aqueous alkali, resp., and the residual gas contained N 1.1, **CH4** 2.4, and H2 96.4 mol%.

IC **C01C0003-02**
CC 49-2 (Industrial Inorganic Chemicals)
ST **hydrogen cyanide** manuf; **ammonia** propane reaction
IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture); PREP (Preparation)**
(manufacture of, from **ammonia** and propane, carbon-to-nitrogen-to-hydrogen ratio control in)

IT 74-98-6, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with **ammonia**, carbon-to-nitrogen-to-hydrogen ratio control in)
IT **7664-41-7**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with propane, carbon-to-nitrogen-to-hydrogen ratio control in)
IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, from **ammonia** and propane, carbon-to-nitrogen-to-hydrogen ratio control in)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

IT **7664-41-7**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with propane, carbon-to-nitrogen-to-hydrogen ratio control in)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

L77 ANSWER 23 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1972:158874 HCAPLUS
DN 76:158874
OREF 76:25873a,25876a
TI Potassium polyaluminate catalysts for reactions of hydrocarbons
IN Yamaguchi, Goro; Komatsu, Susumu; Fukumoto, Tetsuo
PA Kyushu Refractories Co., Ltd.
SO Ger. Offen., 10 pp. Addn. to Ger. Offen. 2,020,981 (CA 75;38696t).
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	DE 2141286	A	19720406	DE 1971-2141286	19710818	<--
	DE 2141286	B2	19751016			
	DE 2141286	C3	19760520			
	JP 51018918	B	19760614	JP 1970-85908	19701002	<--
	US 3759844	A	19730918	US 1971-129177	19710329	<--
	CA 989381	A1	19760518	CA 1971-109085	19710330	<--
	GB 1339515	A	19731205	GB 1971-27051	19710419	<--
	NL 7111804	A	19720405	NL 1971-11804	19710827	<--
PRAI	JP 1970-85908	A	19701002	<--		

AB Catalysts of good activity without need of regeneration and useful, e.g., for the dehydrogenation of butene, Fischer-Tropsch synthesis, and isomerization of CH2:CMeCHMe2, containing alumina (K2O.(5-11)Al2O3), optionally MgO, and 1, 2, or 3 of the metals Fe(III), Cu(II), **Pt**

(IV), Cr(III), Ni(II), Co(II), Mo(VI) were prepared Thus, a CuSO4 solution was added to an aqueous Fe(III) sulfate solution and powdered K2O.(5-6)Al2O3 and MgO
added and precipitated by **NH3**. The precipitate was heated at 650° and pressed to tablets to give a catalyst of MgO-β''-Al2O3-Fe2O3-CuO ratio 40:32.8:18.2:4.5. Butene was dehydrogenated over this catalyst at 650°, gas-space velocity 800 volume/volume/hr and steam-butene ratio 15 kg/l. to give butadiene at conversion 63.2, selectivity 80 mole and yield 50.6. This catalyst showed no decrease in activity after 2000 hr operation.

IC B01J; C07B; C07C; C10G
CC 67 (Catalysis and Reaction Kinetics)
IT Catalysts and Catalysis
(**platinum**-alumina, for **hydrogen cyanide** manufacture)
IT 7439-89-6, uses and miscellaneous **7440-50-8**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, for Fischer-Tropsch synthesis of hydrocarbons)
IT **7440-06-4**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, for **hydrogen cyanide** manufacture)
IT **1344-28-1**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, for isomerization of dimethylbutene)
IT **74-90-8P**
RL: **PREP (Preparation)**
(manufacture of, from **ammonia** and **methane**, catalyst for)
IT **7440-50-8**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, for Fischer-Tropsch synthesis of hydrocarbons)
RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

IT **7440-06-4**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, for **hydrogen cyanide** manufacture)
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **1344-28-1**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, for isomerization of dimethylbutene)
RN 1344-28-1 HCAPLUS
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **74-90-8P**
RL: **PREP (Preparation)**
(manufacture of, from **ammonia** and **methane**, catalyst for)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

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L77 ANSWER 24 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1971:43931 HCAPLUS
DN 74:43931
OREF 74:7060h,7061a
TI **Hydrocyanic acid** and hydrogen from acetonitrile and **ammonia**
PA Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler
SO Fr. Demande, 7 pp.
CODEN: FRXXBL
DT **Patent**
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2014523		19700417	FR 1969-19361	19690611 <--
	DE 1767974			DE	
	GB 1269564			GB	
	US 3658471		19720425	US	19690613 <--
PRAI	DE		19680706 <--		

AB MeCN 1.0 and **NH3** 1.05 moles are passed over a catalyst containing 50-80 atomic % Al or Mg and **Pt** deposited on Al2O3 at 1100-1300° in a sintered Al2O3 tubular reactor. The mixture is rapidly heated and rapidly cooled to give a mixture containing HCN and H. The yield of HCN is about 150 weight % based on MeCN. Thus, a mixture containing MeCN 6.0 and **NH3** 6.3 mole was passed through an Al2O3 tubular reactor having an intimates mixture of **Pt** and Al deposited on its walls. The residence time was 0.16 sec at 1220°, and the mixture was then rapidly cooled to <300° to give a gas containing HCN 47.3, **NH3** 1.1, N 0.8, **CH4** 0.4, MeCN 0.04, and H 49.9 mole %. The output was 11.7 moles HCN/hr, the yield of HCN being 94.7% based on total N input and 97.9% based on C used. After condensation of HCN the residual gas contained H 96.7, **CH4** 1.8, and N 1.5 volume %.

IC C01C; C01B
CC 49 (Industrial Inorganic Chemicals)
ST acetonitrile **ammonia** reaction; **ammonia** acetonitrile reaction; **hydrocyanic acid** prodn; hydrogen prodn
IT Catalysts
(**platinum** group metals, for **hydrocyanic acid** manufacture from acetonitrile and **ammonia**)
IT **7440-05-3**, uses and miscellaneous **7440-06-4**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalysts, for **hydrocyanic acid** manufacture from acetonitrile and **ammonia**)
IT **74-90-8P** 1333-74-0P, preparation
RL: **PREP (Preparation)**
(from acetonitrile and **ammonia**, sintering with **platinum** group metals in)
IT **7440-05-3**, uses and miscellaneous **7440-06-4**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)

(catalysts, for **hydrocyanic acid** manufacture from acetonitrile and **ammonia**)
RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **74-90-8P**
RL: **PREP (Preparation)**
(from acetonitrile and **ammonia**, sintering with **platinum** group metals in)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

N
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L77 ANSWER 25 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1964:50963 HCAPLUS
DN 60:50963
OREF 60:8926h,8927a-c
TI Catalytically active linings in **hydrogen cyanide** reactors
IN Ruosch, Samuel; Joris, Louis
PA Lonza Ltd.
SO 2 pp.
DT **Patent**
LA Unavailable
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3112215		19631126	US 1960-61075	19601007 <--
	CH 385175			CH	
	GB 958784			GB	
PRAI	CH		19591009 <--		

AB For HCN synthesis from **NH3** and **CH4** at 900-1400°, elongated reaction chambers are used having walls lined with a catalyst. Thus, the inner wall of a sillimanite tube 40 mm. in diameter and 1500 mm. long was impregnated with 75 cc. of a HCl solution of Al, **Pt**, and Ru (4.25% Al, calculated as Al2O3; 4% **Pt** and Ru, calculated as Pt88Ru12). The solution was placed in the horizontal tube which was heated uniformly and slowly turned around its axis. After evaporation of the solvent and drying of the residue at 150°, a dry coating of the salts remained. The coated tube was heated at 800°, with the passage of some **NH3**, and then cooled. The process of impregnating, heating at 150°, cooling, heating at 800° was repeated 5 times. The coating consisted of a porous Al oxide layer in

which the **Pt** metals were finely distributed and which was Cl-free. The coating was activated by heating the tube to 1200° while passing 400 l./hr. of **NH3** through the tube. Then **CH4** was added, at such a slow rate that the **CH4** content of the gas leaving the tube, after removal of HCN and **NH3**, never exceeded 0.3-1%. With progressing activation, the addition of **CH4** was increased within 8 days so that the ratio of **NH3:CH4** reached 1:0.7. The reaction tube was then ready to be assembled in the reactor. In HCN synthesis, it is advantageous to use 2 concentric tubes and to pass the reaction gases through the annular space between the tubes. The inner tube must be coated on its inner and outer side with the catalyst and activated.

INCL 117062000
CC 17 (Industrial Inorganic Chemicals)
IT **Platinum** metals
(catalysts from Al2O3 and, in reactors for HCN manufacture)
IT Linings
(for reactors, for HCN manufacture from **NH3** and **CH4**, catalytic)
IT Catalysts and Catalysis
(in **hydrocyanic acid** manufacture, from **NH3** and **CH4**, reactor lining as)
IT **7440-06-4P, Platinum**
RL: PREP (Preparation)
(catalysts from Al2O3 and, for HCN manufacture)
IT **74-90-8P, Hydrocyanic acid**
RL: **PREP (Preparation)**
(manufacture of, from **NH3** and **CH4**, in catalyst-lined reactor)
IT **7429-90-5**, Aluminum
(process metallurgy of, hydrofluoric acid absorption from gas from)
IT **7440-06-4P, Platinum**
RL: PREP (Preparation)
(catalysts from Al2O3 and, for HCN manufacture)
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **74-90-8P, Hydrocyanic acid**
RL: **PREP (Preparation)**
(manufacture of, from **NH3** and **CH4**, in catalyst-lined reactor)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

IT **7429-90-5**, Aluminum
(process metallurgy of, hydrofluoric acid absorption from gas from)
RN 7429-90-5 HCAPLUS
CN Aluminum (CA INDEX NAME)

Al

L77 ANSWER 26 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1958:76286 HCAPLUS
DN 52:76286
OREF 52:13502c-d
TI Synthesis of **hydrogen cyanide** from **methane** and **ammonia** without use of oxygen
AU Endter, F.
CS **DEGUSSA, Konstanz, Germany**
SO Chemie Ingenieur Technik (**1958**), 30, 305-10
CODEN: CITEAH; ISSN: 0009-286X
DT Journal
LA Unavailable
AB The synthesis is carried out in ceramic tubes whose inner wall is covered with a **Pt** catalyst layer of 15-μ thickness. The reaction is strongly endothermic at 1200-1300°. HCN yields are 80-90% based on **CH4** and **NH3**, resp. About 10% of the **NH3** is recovered as (NH4)2SO4. The product gas contains more than 20 volume % of HCN, with the remainder essentially H. Operating data, flow diagrams, and design details are given.
CC 6 (Inorganic Chemistry)
IT **74-90-8P, Hydrocyanic acid**
RL: **PREP (Preparation)**
(preparation of, from **NH3** and **CH4**)
IT **74-90-8P, Hydrocyanic acid**
RL: **PREP (Preparation)**
(preparation of, from **NH3** and **CH4**)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

N
‖
CH

L77 ANSWER 27 OF 27 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1953:13936 HCAPLUS
DN 47:13936
OREF 47:2440g-i,2441a-b
TI The manufacture of **hydrocyanic acid** from **methane, ammonia,** and air
AU Maffezzoni, Umberto
CS Research Inst. "Guido Donegani", Montecatini, Italy
SO Chimica e l'Industria (Milan, Italy) (**1952**), 34, 460-5
CODEN: CINMAB; ISSN: 0009-4315
DT Journal
LA Unavailable
AB For the reaction **CH4** + **NH3** = HCN + 3 H2, ΔF = 57,800 - 11.5 T ln T - 0.00137 T2 + 25.3 cal., ΔH = 57,800 + 11.5 T + 0.00137 T2 cal., and ln K = -12,700/T + 5.82 ln T + 0.0003 T -5.55. From these equations it follows that for yields greater than 95% a temperature of about 1000° is necessary. Many different catalysts are effective in this reaction, e.g. **Pt**, Rh, Ir, Ru, Os, Au, Al2O3, ThO2, TiO2, and SiO2; the one preferred is **Pt**, either pure or alloyed with Rh or Ir. **Pt** gauze corrodes and breaks down

rapidly in service under the action of HCN and O2, so the use of **Pt** supported on porous porcelain, pumice, Al2O3, etc., is mandatory. With one of these supports, service of more than 2000 hrs. can be obtained without appreciable lowering of yields. A pilot plant producing 100 kg. of 100% HCN per day is operated under the following conditions: volume ratio **CH4** to **NH3**, 1.063; percentage by volume of **NH3** in the air-**CH4**-**NH3** mixture, 11.5-13.5; yield based on **NH3** used, 60%; yield based on **NH3** reacting, 84.9%; thickness of catalyst bed, 40-45 mm.; gas velocity, 450 normal l./hr./sq. cm. Air passing a wash tower is preheated and mixed with streams of **CH4** and **NH3**. The mixture at a temperature of 150-200° goes to the reactor. Gases at temps. of 1150-1200° leaving this chamber are cooled in a boiler which recuperates 6-7 kg. of steam per kg. of HCN obtained. The gas mixture, which in addition to HCN contains **NH3**, CO2, CO, H2, **CH4**, and N2, is washed in a tower with dilute H2SO4 to remove 0.31 kg. of **NH3** per kg. of HCN, in the form of the salt. The 20% solution of HCN is distilled to yield a nearly pure product.

CC 18 (Acids, Alkalies, Salts, and Other Heavy Chemicals)

IT Energy
(free, of **NH3** reaction with **CH4**)

IT Catalysts
(in **ammonia** reaction with **CH4** to form HCN)

IT Heat of reaction
(of **ammonia** with **CH4**)

IT 7439-88-5, Iridium
(as catalyst in **NH3** reaction with **CH4**)

IT 1314-20-1, Thorium oxide, ThO2 **1344-28-1**, Alumina 7440-04-2, Osmium **7440-06-4**, **Platinum** 7440-16-6, Rhodium 7440-18-8, Ruthenium **7440-57-5**, Gold 13463-67-7, Titanium oxide, TiO2
(as catalyst, in **NH3** reaction with **CH4**)

IT **7664-41-7P**, **Ammonia**
RL: **PREP (Preparation)**
(**hydrocyanic acid** manufacture from air, **CH4** and)

IT **74-82-8P**, **Methane**
RL: **PREP (Preparation)**
(**hydrocyanic acid** manufacture from air, **NH3** and)

IT **74-90-8P**, **Hydrocyanic acid**
RL: **PREP (Preparation)**
(manufacture of, from air, **NH3** and **CH4**)

IT **1344-28-1**, Alumina **7440-06-4**, **Platinum** **7440-57-5**, Gold
(as catalyst, in **NH3** reaction with **CH4**)

RN 1344-28-1 HCAPLUS
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-57-5 HCAPLUS
CN Gold (CA INDEX NAME)

Au

IT **7664-41-7P, Ammonia**
RL: **PREP (Preparation)**
(**hydrocyanic acid** manufacture from air, **CH4** and)
RN 7664-41-7 HCAPLUS
CN Ammonia (CA INDEX NAME)

NH_3

IT **74-82-8P, Methane**
RL: **PREP (Preparation)**
(**hydrocyanic acid** manufacture from air, **NH3** and)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

IT **74-90-8P, Hydrocyanic acid**
RL: **PREP (Preparation)**
(manufacture of, from air, **NH3** and **CH4**)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

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L104 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2004:220255 HCAPLUS
DN 140:256300
TI Vapor deposited **catalysts** and their use in fuel cells
IN Figueroa, Juan C.; Lundgren, Cynthia A.
PA E.I. Du Pont De Nemours and Company, USA
SO PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004022209	A2	20040318	WO 2003-US20893	20030630 <--
	WO 2004022209	A3	20040603		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,

LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,
PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CA 2488724	A1	20040318	CA 2003-2488724	20030630	<--
AU 2003298520	A1	20040329	AU 2003-298520	20030630	<--
EP 1516380	A2	20050323	EP 2003-794432	20030630	<--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
CN 1666365	A	20050907	CN 2003-815796	20030630	<--
JP 2005532670	T	20051027	JP 2004-534236	20030630	<--
US 2005255370	A1	20051117	US 2004-518330	20041215	<--
PRAI US 2002-393351P	P	20020701	<--		
WO 2003-US20893	W	20030630			

AB The invention provides a **catalyst** useful in a proton exchange membrane containing fuel cell for the electrooxidn. of fuels prepared by the chemical activation of vapor deposited substantially semicryst. PtXaAlb onto a substrate, wherein X is selected from the group consisting of Ru, Rh, Mo, W, V, Hf, Zr, Nb and Co, and a is at least 0.001, and b is at least 0.85 (1+a), with the proviso that when a = 1 and b = 8, X is only selected from the group consisting of W, V, Hf, Zr, Nb, and Co. These **catalysts** have an onset voltage for the electrooxidn. of methanol of less than about 240 mV vs. a SCE. They are useful in making diffusion backing electrodes and **catalyst** coated membranes for use in fuel cells.

IC ICM **B01J**

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56, 67, 72

ST fuel cell vapor deposited **catalyst**

IT Fuel cells
(direct methanol; vapor deposited **catalysts** and their use in fuel cells)

IT **Catalysts**
(**electrocatalysts**; vapor deposited **catalysts** and their use in fuel cells)

IT Oxidation **catalysts**
(electrochem.; vapor deposited **catalysts** and their use in fuel cells)

IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(gas diffusion backing; vapor deposited **catalysts** and their use in fuel cells)

IT Sulfonic acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(perfluorosulfonic acid polymers, substrate; vapor deposited **catalysts** and their use in fuel cells)

IT Magnetron sputtering
(radio-frequency; vapor deposited **catalysts** and their use in fuel cells)

IT Fuel cells
(solid electrolyte, proton exchange membrane; vapor deposited **catalysts** and their use in fuel cells)

IT Ion exchange membranes
(substrate; vapor deposited **catalysts** and their use in fuel cells)

IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)

(sulfo-containing, perfluoro, substrate; vapor deposited **catalysts** and their use in fuel cells)
IT Oxidation, electrochemical
Vapor deposition process
(vapor deposited **catalysts** and their use in fuel cells)
IT 9002-84-0, Ptfe
RL: TEM (Technical or engineered material use); USES (Uses)
(gas diffusion backing; vapor deposited **catalysts** and their use in fuel cells)
IT 7440-44-0, Carbon, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(paper, gas diffusion backing; vapor deposited **catalysts** and their use in fuel cells)
IT 199009-17-1 271598-57-3 499778-45-9 669054-73-3 669054-74-4
669054-75-5 669054-76-6 669054-77-7 669054-78-8
669054-79-9 **669054-80-2** 669054-81-3 669054-82-4
669054-83-5 669054-84-6 669054-85-7 669054-87-9 669054-88-0
669054-89-1 669054-90-4 669054-91-5 669054-92-6
RL: **CAT (Catalyst use)**; USES (Uses)
(vapor deposited **catalysts** and their use in fuel cells)
IT 1310-73-2, Sodium hydroxide, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(vapor deposited **catalysts** and their use in fuel cells)
IT 67-56-1, Methanol, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(vapor deposited **catalysts** and their use in fuel cells)
IT **669054-75-5 669054-80-2**
RL: **CAT (Catalyst use)**; USES (Uses)
(vapor deposited **catalysts** and their use in fuel cells)
RN 669054-75-5 HCAPLUS
CN Aluminum alloy, nonbase, Al,Pt,W (9CI) (CA INDEX NAME)

Component	Component Registry Number
Al	7429-90-5
Pt	7440-06-4
W	7440-33-7

RN 669054-80-2 HCAPLUS
CN Platinum alloy, base, Pt 62,Al 30,W 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	62	7440-06-4
Al	30	7429-90-5
W	8	7440-33-7

L104 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1996:11282 HCAPLUS
DN 124:92567
TI Manufacture of **catalysts** for methanol steam reforming
IN Nozaki, Katsutoshi; Masumoto, Takeshi; Inoe, Akihisa; Fukui, Hideo; Uzawa, Masami
PA Wai Kei Kei KK, Japan; Chichibu Onoda KK; Honda Motor Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF

DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07265704	A	19951017	JP 1994-82510	19940329 <--
	JP 3382343	B2	20030304		

PRAI JP 1994-82510 19940329 <--

AB The manufacture comprises (1) preparation of molten Al alloys containing Cu at 5-20 atomic% and AE elements selected from rare earth metals, Fe, Mn, Pd, Co, V, Ag, and/or Pt 4-18 atomic%, (2) rapid solidification of the molten alloys to give **catalyst** materials, and (3) Al elution treatment to give **catalysts** having surfaces uniformly dispersed with Cu-based ultrafine particles and AE-based ultrafine particles. The Al elution treatment may contain immersing **catalyst** materials in aqueous solns. containing acids or bases. The **catalyst** materials may contain metallic structure having amorphous single phase structure. Resulting **catalysts** have high activity and durability.

IC ICM **B01J0025-00**
ICS **B01J0023-76**; **B01J0037-00**; C01B0003-32

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 67

ST methanol steam reforming **catalyst** copper

IT Acids, processes
Bases, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(Al dissoln. by; manufacture of **catalysts** containing Cu for steam reforming of methanol for activity and durability)

IT Fuel gas manufacturing
Reforming **catalysts**
Steam
(manufacture of **catalysts** containing Cu for steam reforming of methanol for activity and durability)

IT Rare earth metals, uses
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(ultrafine particle; manufacture of **catalysts** containing Cu for steam reforming of methanol for activity and durability)

IT 1310-73-2, Sodium hydroxide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(Al elution by; manufacture of **catalysts** containing Cu for steam reforming of methanol for activity and durability)

IT 7429-90-5, Aluminum, processes
RL: REM (Removal or disposal); PROC (Process)
(elution of; manufacture of **catalysts** containing Cu for steam reforming of methanol for activity and durability)

IT 63083-59-0 125129-28-4 156247-49-3 168066-49-7 172851-78-4
172851-79-5 172851-80-8 172851-81-9 172851-82-0 172851-83-1
172851-84-2 172851-85-3 172851-86-4 172851-87-5 172851-88-6
172851-89-7 172851-90-0 172851-91-1 **172851-92-2**
172851-93-3 172851-94-4
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(manufacture of **catalysts** containing Cu for steam reforming of methanol for activity and durability)

IT 1333-74-0P, Hydrogen, preparation
RL: PNU (Preparation, unclassified); PREP (Preparation)
(manufacture of **catalysts** containing Cu for steam reforming of methanol for activity and durability)

IT 67-56-1, Methanol, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(manufacture of **catalysts** containing Cu for steam reforming of methanol for activity and durability)

IT 1307-96-6P, Cobalt oxide (CoO), uses 1309-37-1P, Ferric oxide, uses 1314-36-9P, Yttria, uses 1314-62-1P, Vanadium oxide (V2O5), uses 1317-39-1P, Copper oxide (Cu2O), uses 1344-43-0P, Manganese oxide (MnO), uses 7439-89-6P, Iron, uses 7439-96-5P, Manganese, uses 7440-05-3P, Palladium, uses 7440-06-4P, Platinum, uses 7440-22-4P, Silver, uses 7440-48-4P, Cobalt, uses 7440-50-8P, Copper, uses 7440-62-2P, Vanadium, uses 7440-65-5P, Yttrium, uses 39377-54-3P, Lanthanum hydroxide
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(ultrafine particle; manufacture of **catalysts** containing Cu for steam reforming of methanol for activity and durability)

IT **172851-92-2**
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(manufacture of **catalysts** containing Cu for steam reforming of methanol for activity and durability)

RN 172851-92-2 HCAPLUS
CN Aluminum alloy, base, Al 53,Pt 24,Cu 23 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Al	53	7429-90-5
Pt	24	7440-06-4
Cu	23	7440-50-8

L104 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1993:524095 HCAPLUS
DN 119:124095
TI Noble metal substrates for **catalyst** supports for long life
IN Tsurumi, Kazunori; Sasaki, Masahiro; Yamamoto, Tosha
PA Tanaka Precious Metal Ind, Japan
SO Jpn. Kokai Tokkyo Koho, 2 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05103982	A	19930427	JP 1991-296381	19911016 <--
PRAI	JP 1991-296381		19911016 <--		

AB Pt, Pd, or Pt-Pd alloys are alloyed with Al and then treated to produce a surface layer of Al2O3. The alloys are resistant to oxidative corrosion at high temps. and are suitable for combustion **catalysts** and for waste and exhaust gas treatment **catalysts**.

IC ICM **B01J0023-42**
ICS B01D0053-36; **B01J0023-44**; **B01J0032-00**; **B01J0037-08**

CC 59-4 (Air Pollution and Industrial Hygiene)

ST platinum **catalyst** support alumina coating; palladium **catalyst** support alumina coating; combustion **catalyst** support platinum; exhaust gas treatment **catalyst** support; flue gas treatment **catalyst** support

IT Coating materials
(alumina, formation of, on aluminum-alloyed platinum and/or palladium, by heating, for **catalyst** supports)

IT Exhaust gases
Flue gases
(**catalysts** supports for treatment of, alumina coatings on aluminum-alloyed platinum and/or palladium as)
IT Combustion **catalysts**
(supports for, aluminum-alloyed platinum and/or palladium, alumina coatings on)
IT 90175-82-9 94766-95-7 116594-07-1 149595-72-2 **149686-28-2**
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalyst** supports, alumina coatings on)
IT 1344-28-1, Alumina, uses
RL: USES (Uses)
(coatings, on aluminum-alloyed platinum and/or palladium for **catalyst** supports)
IT **149686-28-2**
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalyst** supports, alumina coatings on)
RN 149686-28-2 HCAPLUS
CN Aluminum alloy, nonbase, Al,Pd,Pt (9CI) (CA INDEX NAME)

Component	Component Registry Number
Al	7429-90-5
Pd	7440-05-3
Pt	7440-06-4

L104 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1979:159067 HCAPLUS
DN 90:159067
OREF 90:25165a,25168a
TI Thermodesorption and electrochemical study of the state of hydrogen in **catalysts** based on platinum group metals
AU Fasman, A. B.; Padyukova, G. L.; Zavorin, V. A.; Kutyukov, G. G.; Bazhakov, D. K.
CS USSR
SO Tr. In-ta Organ. Kataliza i Elektrokhimii. AN KazSSR (**1978**), (18), 92-100
From: Ref. Zh., Khim. 1979, Abstr. No. 1B1256
DT Journal
LA Russian
AB Title only translated.
CC 72-12 (Electrochemistry)
Section cross-reference(s): 66, 67
ST thermodesorption hydrogen platinum metal **catalyst**; desorption hydrogen platinum metal **catalyst**
IT Platinum-group metals
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, thermodesorption and state of hydrogen in)
IT Desorption
(thermal, of hydrogen, in **catalysts** based on platinum-group metals)
IT 7440-05-3, uses and miscellaneous 7440-06-4, uses and miscellaneous 7440-16-6, uses and miscellaneous **69930-12-7** 69930-13-8 69930-14-9 69930-15-0
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, thermodesorption and state of hydrogen in)
IT 1333-74-0, properties
RL: PRP (Properties)

(thermodesorption and state of, in **catalysts** based on platinum-group metals)

IT **69930-12-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, thermodesorption and state of hydrogen in)

RN 69930-12-7 HCAPLUS
CN Platinum alloy, base, Pt 51-65,Pd 7.5-28,Al 21-27 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	51 - 65	7440-06-4
Pd	7.5 - 28	7440-05-3
Al	21 - 27	7429-90-5

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L105 ANSWER 1 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:899282 HCAPLUS
DN 140:155049
TI Semiconducting Al-transition-metal quasicrystals
AU Krajci, M.; Hafner, J.
CS Institute for Physics of Materials and Center for Computational Materials Science, University of Vienna, Vienna, A-1090, Austria
SO Physical Review B: Condensed Matter and Materials Physics (**2003**), 68(16), 165202/1-165202/11
CODEN: PRBMDO; ISSN: 0163-1829
PB American Physical Society
DT Journal
LA English
AB The authors report on a class of icosahedral Al-transition-metal (Al-TM) alloys with true semiconducting behavior. The authors' description of the structure of these icosahedral quasicrystals is based on the six-dimensional Katz-Gratias-Boudard (KGB) model of the face-centered-icosahedral (fci) quasicrystal and its rational approximants. The shell structure of the atomic surfaces in perpendicular space defines the chemical order of Al and transition-metal (TM) atoms leading to semiconducting transport properties. In transition-metal aluminides the hybridization between the Al(s,p) and transition-metal d orbitals is responsible for the formation of a semiconducting gap in the electronic spectrum. The authors analyzed the electronic charge distribution and observed an enhanced charge d. along the Al-TM bonds that is characteristic of covalent bonding. The existence of an energy gap in the electronic spectrum at or in the vicinity of the Fermi level is explicitly demonstrated for several low-order approximants in the hierarchy of Fibonacci approximants which converges to the icosahedral quasicrystals of the fci class, to which also the i-AlPdRe belongs. The authors predict existence of truly semiconducting quasicryst. 1/1-approximants. The authors' results also lead to the prediction of the existence of new semiconducting quasicrystals with specified Al-TM compns. The possibility of the existence of a semiconducting band gap suggests an explanation for the anomalously high resistivity of the icosahedral AlPdRe quasicrystals. Substitutional defects violating the ideal Al-TM ordering predicted by the KGB model give localized states in the band gap. A real sample of i-AlPdRe thus seems to be a semiconductor with a band gap filled by the localized states.
IT **652133-58-9**, Aluminum 70.73, platinum 22.79, tungsten 6.48
(atomic)

RL: PRP (Properties)
(model of semiconductor properties of icosahedral quasicrystals of aluminum-transition metal alloys)
RN 652133-58-9 HCAPLUS
CN Platinum alloy, base, Pt 59,Al 25,W 16 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	59	7440-06-4
Al	25	7429-90-5
W	16	7440-33-7

RE.CNT 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L105 ANSWER 2 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:600981 HCAPLUS
DN 139:279707
TI Hydrogen diffusivity and solubility in palladium alloys
AU dos Santos, D. S.; Azambuja, V. M.; Pontonnier, L.; Miraglia, S.; Fruchart, D.
CS PEMM-COPPE/UFRJ, Rio de Janeiro, RJ, 21941-972, Brazil
SO Journal of Alloys and Compounds (**2003**), 356-357, 236-239
CODEN: JALCEU; ISSN: 0925-8388
PB Elsevier Science B.V.
DT Journal
LA English
AB Samples of Pd0.97Al0.03, Pd0.9Pt0.1 and (Pd0.9Pt0.1)0.97Al0.03 alloys, cold worked and internally oxidized at 1073 K for 72 h were submitted to a H permeation test at 313 K, using 2 levels of cathodic charging current for H generation, equal to 0.1 and 20 mA. The effects of internal oxidation were investigated by X-ray diffraction and transmission electron microscopy (TEM). The formation of prismatic nano-ppts. of Al2O3 was observed by TEM analyses in Pd0.97Al0.03. However, in the (Pd0.9Pt0.1)0.97Al0.03 alloy, the formation of Al2O3 was not observed, which suggests that the addition of Pt to Pd-Al inhibits the internal oxidization of Al. Cold work and addition of Al and Pt to Pd contribute to decrease the hydrogen diffusion coefficient, but, on the other hand, increase the apparent H solubility, Sapp. This increase is more effective for Pd0.97Al0.03 sample where Sapp= 1075 mol H m-3. A great deviation in the H permeation curve, performed at 20 mA, was observed for Pd0.97Al0.03 internally oxidized, which indicated hydride formation during the test. This behavior was observed for oxidized Pd0.97Al0.03 but not for the (Pd0.9Pt0.1)0.97Al0.03 alloy.
IT **486990-98-1**, Aluminum 3, palladium 87.3, platinum 9.7 (atomic)
RL: PRP (Properties)
(H diffusivity and solubility in Pd alloys)
RN 486990-98-1 HCAPLUS
CN Palladium alloy, base, Pd 82,Pt 17,Al 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pd	82	7440-05-3
Pt	17	7440-06-4
Al	0.7	7429-90-5

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L105 ANSWER 3 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:599510 HCAPLUS
DN 139:315010
TI Semiconductivity in aluminum-transition-metal quasicrystalline alloys induced by ordering in six dimensions
AU Krajci, M.; Hafner, J.
CS Institut fuer Materialphysik and Center for Computational Materials Science Universitaet Wien - Sensengasse 8/12, Vienna, A-1090, Austria
SO Europhysics Letters (2003), 63(1), 63-68
CODEN: EULEEJ; ISSN: 0295-5075
PB EDP Sciences
DT Journal
LA English
AB The authors report on a class of icosahedral Al-transition-metal (Al-TM) alloys with true semiconducting behavior. The existence of a semiconducting gap depends critically on a particular kind of Al-TM ordering defined by a simple rule in the 6-dimensional superspace. Any deviation from this 6-dimensional order gives strongly localized defect states in the gap. By a judicious selection of transition metals to be alloyed with Al, the authors can find alloys with a semiconducting gap at the Fermi level for a hierarchy of approximants to a quasicrystal. As the electron/atom ratio placing the Fermi level into the gap is slightly different for each approximant, probably the gap persists also in the quasiperiodic limit. Icosahedral Al-Pd-Re turns out to be a semiconductor with a band gap filled by the localized states.
IT **611234-08-3**, Aluminum 68.8, platinum 28.1, tungsten 3.12 (atomic)
RL: PRP (Properties)
(semicond. in aluminum-transition-metal quasicryst. alloys induced by ordering in six dimensions)
RN 611234-08-3 HCAPLUS
CN Platinum alloy, base, Pt 69,Al 23,W 7.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	69	7440-06-4
Al	23	7429-90-5
W	7.2	7440-33-7

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L105 ANSWER 4 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:233819 HCAPLUS
DN 139:39932
TI Phase transformation and the type of lattice distortion of some platinum-rich phases belonging to the Cu family
AU Meininger, H.; Ellner, M.
CS Max-Planck-Institut fuer Metallforschung, Stuttgart, D-70569, Germany
SO Journal of Alloys and Compounds (2003), 353(1-2), 207-212
CODEN: JALCEU; ISSN: 0925-8388
PB Elsevier Science B.V.
DT Journal
LA English
AB Two different types of lattice distortion are observed in the Pt-rich phases with Al, Ga, and In. While in the binary phases Pt3Al(l) and Pt3Ga(l) (homeotypic with the Ir3Si structure), the tetragonal substructure lattice distortion shows the values c/a>1, the ternary Pt-based representatives of the CuAu type significantly show the values of the axial ratio c/a«1. This tetragonal lattice distortion increases with increasing

valence electron concentration No continuous solid solution between the homologous
isostructural phases Ni3Al and Pt3Al(h) was found either by rapid liquid quenching or by heat treatment of the alloys Ni0.75-xPtxAl0.25. The ternary phase NiPt2Al (CuAu type) occurs in the composition range 0.37≤xPt≤0.50. Structural and powder diffraction data are presented for the ternary phases NiPt2Al, Pt2CuAl, and Pt2CuGa (CuAu type).

IT **541540-87-8**
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(intermetallic compound; phase transformation, lattice distortion, and structure of Pt-based intermetallic compds.)
RN 541540-87-8 HCAPLUS
CN Aluminum, compd. with copper and platinum (1:1:2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cu	1	7440-50-8
Pt	2	7440-06-4
Al	1	7429-90-5

IT **541540-85-6**
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(phase transformation, lattice distortion, and structure of Pt-based intermetallic compds.)
RN 541540-85-6 HCAPLUS
CN Platinum alloy, base, Pt 81,Cu 13,Al 5.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	81	7440-06-4
Cu	13	7440-50-8
Al	5.6	7429-90-5

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L105 ANSWER 5 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:972493 HCAPLUS
DN 138:274804
TI The role of Al on the thermodynamics of hydrogen absorption/desorption by some ternary Pd-M-Al alloys where M = Rh, Ni, Pt, Cr, Ag
AU Wang, D.; Flanagan, Ted B.; Shanahan, Kirk L.
CS Chemistry Department, University of Vermont, Burlington, VT, 05405, USA
SO Journal of Alloys and Compounds (**2003**), 349(1-2), 152-163
CODEN: JALCEU; ISSN: 0925-8388
PB Elsevier Science B.V.
DT Journal
LA English
AB The solution of hydrogen and hydride formation in face centered cubic substitutional solid
solution Pd0.9Rh0.1-xAlx alloys were examined In contrast to some other Pd ternary alloys, a linear relation does not obtain between the H capacity and x for these alloys where the H capacity of the alloys is estimated from the H content of the steeply rising part of the isotherms in the hydride phase regions. A linear increase of the dilute phase H solubility with x for

these Pd0.9Rh0.1-xAlx alloys does, however, obtain for these alloys. Although Pd-Rh binary alloys have wider plateaux than does Pd itself, small amts. of Al substituted into Pd0.85Rh0.15 or Pd0.80Rh0.20 alloys can reduce or eliminate the two phase regions, the plateaux; there is, however, not much effect on the dilute phase solubilities. For example, small amts. of Al substituted into the Pd0.85Rh0.15 or Pd0.80Rh0.20 alloys eliminate the plateaux. Alloying Pd with Al to form binary alloys with XAl=0.015 or 0.030 does not eliminate the plateaux which are present in these binary alloys up to XAl=0.075 (323 K). Small amts. of Al substitution do not have such a dramatic effect on the plateau widths of the Pd0.90Ni0.10 and Pd0.80Ni0.20 alloys and similarly substitution of Al into Pd-Cr and Pd-Ag alloys does not introduce any dramatic effects.

IT **503160-07-4 503160-08-5 503160-09-6**
503160-10-9
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(effect of Al on thermodn. of hydrogen absorption/desorption by ternary Pd-M-Al alloys (M = Rh, Ni, Pt, Cr, Ag))

RN 503160-07-4 HCAPLUS
CN Palladium alloy, base, Pd 83,Pt 17,Al 0.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pd	83	7440-05-3
Pt	17	7440-06-4
Al	0.6	7429-90-5

RN 503160-08-5 HCAPLUS
CN Palladium alloy, base, Pd 90,Pt 8.9,Al 0.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pd	90	7440-05-3
Pt	8.9	7440-06-4
Al	0.6	7429-90-5

RN 503160-09-6 HCAPLUS
CN Palladium alloy, base, Pd 84,Pt 16,Al 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pd	84	7440-05-3
Pt	16	7440-06-4
Al	0.7	7429-90-5

RN 503160-10-9 HCAPLUS
CN Palladium alloy, base, Pd 90,Pt 9,Al 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pd	90	7440-05-3
Pt	9	7440-06-4
Al	0.7	7429-90-5

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L105 ANSWER 6 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:822194 HCAPLUS
DN 138:110446
TI Effects of internal oxidation on the hydrogen permeation in Pd0.97Al0.03 and (Pd0.9Pt0.1)0.97Al0.03 alloys
AU Azambuja, V. M.; dos Santos, D. S.; Pontonnier, L.; Miraglia, S.; Fruchart, D.
CS Pemm-Coppe/UFRJ, Rio de Janeiro, 21945-970, Brazil
SO Journal of Alloys and Compounds (2002), 346(1-2), 142-146
CODEN: JALCEU; ISSN: 0925-8388
PB Elsevier Science B.V.
DT Journal
LA English
AB Specimens of the Pd0.97Al0.03 and (Pd0.9Pt0.1)0.97Al0.03 alloys, internally oxidized at 1073 K for 72 h, were submitted to three sorption-desorption cycles at 313 K by an electrochem. hydrogen permeation technique. The effects of internal oxidation were investigated by X-ray diffraction (XRD) and TEM. We observed by XRD the formation of PdO2 only in the case of the Pd0.97Al0.03 alloy, while for the (Pd0.9Pt0.1)0.97Al0.03 alloy, there was no indication of internal oxidation of the alloying elements after annealing at 1073 K for 72 h. TEM anal. in the heat treated Pd0.97Al0.03 alloy showed dispersed nanoppts. of Al2O3, markedly in coherent interface with the Pd matrix. However, in the heat treated (Pd0.9Pt0.1)0.97Al0.03 alloy, areas rich in Pt and Al were observed only, suggesting the formation of PtAl clusters. In the Pd0.97Al0.03 alloy due to the presence of Al2O3 and PdO2 the hydrogen diffusivity (Dapp=2.3+10-12 m2 s-1) is very low in comparison to that of the (Pd0.9Pt0.1)0.97Al0.03 alloy (Dapp=1.0+10-11 m2 s-1) and a heat treated pure Pd specimen (Dapp=5.5+10-11 m2 s-1). The hydrogen solubility in the heat-treated Pd0.97Al0.03 is quite high (1075 mol H m-3) due to the appearance of new interfaces to trap hydrogen. The low value of hydrogen solubility presented by (Pd0.9Pt0.1)0.97Al0.03 (136 mol H m-3) is attributed to the non oxidation of the constituting elements.
IT **486990-98-1**, Aluminum 3, palladium 87.3, platinum 9.7 (atomic)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(effects of internal oxidation on hydrogen permeation in Pd0.97Al0.03 and (Pd0.9Pt0.1)0.97Al0.03 alloys)
RN 486990-98-1 HCAPLUS
CN Palladium alloy, base, Pd 82,Pt 17,Al 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pd	82	7440-05-3
Pt	17	7440-06-4
Al	0.7	7429-90-5

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L105 ANSWER 7 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:711881 HCAPLUS
DN 138:44990
TI Covalent bonding and band-gap formation in ternary transition-metal di-aluminides: Al4MnCo and related compounds
AU Krajci, M.; Hafner, J.
CS Institut fur Materialphysik and Centre for Computational Materials Science, Universitat Wien, Vienna, A-1090, Austria

SO Journal of Physics: Condensed Matter (2002), 14(30), 7201-7219
CODEN: JCOMEL; ISSN: 0953-8984
PB Institute of Physics Publishing
DT Journal
LA English
AB In this paper we extend our previous study of the electronic structure of and bonding mechanism in transition-metal (TM) di-aluminides to ternary systems. We have studied the character of the bonding in Al4MnCo and related TM dialuminides in the C11b (MoSi2) and C54 (TiSi2) crystal structures. A peculiar feature of the electronic structure of these TM di-aluminides is the existence of a semiconducting gap at the Fermi level. In our previous work we predicted a gap in Al2 TM compds. where the TM atoms have eight valence electrons. Here we demonstrate that the semiconducting gap does not disappear if the TM sites are occupied by two different TMs, provided that the electron-per-atom ratio is conserved. Such a replacement substantially increases the class of possibly semiconducting TM di-aluminides. Substitution for 3d TMs of 4d or 5d TMs enhances the width of the gap. From the anal. of the charge d. distribution and the crystal orbital overlap population, we conclude that the bonding between atoms has dominantly covalent character. This is confirmed not only by the enhanced charge d. halfway between atoms, but also by the clear bonding-antibonding splitting of the electronic states. If the gaps between split states that correspond to all bonding configurations in the crystal have a common overlap at the Fermi level, the intermetallic compound becomes a semiconductor. However, the results of the total-energy calcns. suggest that the existence of a band gap does not necessarily imply a stable structure. Strong covalent bonds can exist also in Al-TM structures where no band gap is observed
IT **478369-11-8**
RL: PRP (Properties)
(covalent bonding and band-gap formation in ternary transition-metal di-aluminides)
RN 478369-11-8 HCAPLUS
CN Aluminum, compd. with platinum and tungsten (4:1:1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
W	1	7440-33-7
Pt	1	7440-06-4
Al	4	7429-90-5

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L105 ANSWER 8 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:590103 HCAPLUS
DN 137:235846
TI Platinum alloys based on Pt-Pt3Al for ultra-high temperature use
AU Hill, P. J.; Adams, N.; Biggs, T.; Ellis, P.; Hohls, J.; Taylor, S. S.; Wolff, I. M.
CS Physical Metallurgy Division, Mintek, Randburg, 2125, S. Afr.
SO Materials Science & Engineering, A: Structural Materials: Properties, Microstructure and Processing (2002), A329-A331, 295-304
CODEN: MSAPE3; ISSN: 0921-5093
PB Elsevier Science B.V.
DT Journal
LA English
AB Platinum-aluminum alloys based on the L12 compound Pt3Al have potential as high-strength alloys with superior environmental resistance at ultra-high

temps. Two-phase microstructures, analogous to the nickel-base superalloys, and consisting of the intermetallic compound Pt3Al and the (Pt) solid solution, can be engineered to have the attributes of microstructural stability, environmental resistance, high-temperature strength and room-temperature ductility. Pt3Al exists as a tetragonal phase below 1290°C, and ternary alloying is employed both to stabilize the L12 crystal form of Pt3Al and as a solid-solution strengthener of the (Pt) phase. In this investigation, the phase relations of the Pt-rich comers of eight Pt-Al-X ternary systems (X=Ru, Re, W, Mo, Ni, Ti, Ta and Cr) are characterized. The solubility of element X in (Pt) and Pt3Al, and the effect on the phase boundaries, was assessed using SEM-EDS. XRD was used to assess which crystal variant of Pt3Al was stabilized. Preliminary room-temperature mech. testing was carried out on the alloys. This assessment has been used to select the most promising systems for further characterization.

IT **459143-92-1 459143-93-2**
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(platinum alloys based on Pt-Pt3Al for ultra-high temperature use)

RN 459143-92-1 HCAPLUS
CN Platinum alloy, base, Pt 92,W 5.4,Al 2.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	92	7440-06-4
W	5.4	7440-33-7
Al	2.4	7429-90-5

RN 459143-93-2 HCAPLUS
CN Platinum alloy, base, Pt 93,W 4.5,Al 3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	93	7440-06-4
W	4.5	7440-33-7
Al	3	7429-90-5

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L105 ANSWER 9 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:533166 HCAPLUS
DN 137:97209
TI Electrically conductive refractories for immersion into molten steels
IN Ueshima, Yoshiyuki; Takagi, Katsumasa
PA Nippon Steel Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002201066	A	20020716	JP 2000-401615	20001228 <--
PRAI	JP 2000-401615		20001228 <--		

AB The refractories are formed by mixing ZrO2 powder and/or Al2O3 powder with 40-90% (based on total compns.) W powder, pressing the mixts., and

sintering them. The refractories show good thermal shock resistance and corrosion resistance in molten steels, and are useful for electrodes for O determination, thermocouple protection tubes, etc.

IT **441768-48-5**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(anticorrosive elec. conductive refractories containing W and ZrO2 and/or Al2O3 for immersion into molten steels)

RN 441768-48-5 HCAPLUS

CN Aluminum oxide (Al2O3), alloy, Al2O3 50,W 40,Pt 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Al2O3	50	1344-28-1
W	40	7440-33-7
Pt	10	7440-06-4

L105 ANSWER 10 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2002:236093 HCAPLUS

DN 136:251035

TI Silver alloys for eyeglasses frames

IN Ueno, Takashi

PA Furuya Metal Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2002088425	A	20020327	JP 2000-277803	20000913 <--
PRAI JP 2000-277803		20000913 <--		

AB A Ag alloy for eyeglasses frame contains 0.1-4.9% Pd and 0.1-4.9% Al, Au, Pt, Cu, Ta, Cr, Ti, Co, and/or Si. The alloy has high corrosion resistance. A variety of other Ag-based alloys are also claimed.

IT **404392-37-6**
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(silver alloy for eyeglasses frames)

RN 404392-37-6 HCAPLUS

CN Silver alloy, base, Ag 90-100,Al 0.1-4.9,Pt 0.1-4.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ag	90 - 100	7440-22-4
Al	0.1 - 4.9	7429-90-5
Pt	0.1 - 4.9	7440-06-4

L105 ANSWER 11 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2002:236092 HCAPLUS

DN 136:251034

TI Golf clubs from erosion-resistant silver alloys

IN Ueno, Takashi

PA Furuya Metal Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF

DT **Patent**

LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002088424	A	20020327	JP 2000-277802	20000913 <--
PRAI	JP 2000-277802		20000913 <--		

AB Erosion-resistant Ag alloys containing 0.1-4.9% Pd and 0.1-4.9% Al, Au, Pt, Cu, Ta, Cr, Ti, Co, and/or Si or 0.1-4.9% Ir (Pt, Ru or Rh) and 0.1-4.9% Cu, Al and/or Ti are used for manufacture of golf clubs.
IT **404392-37-6**
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(golf clubs from erosion-resistant silver alloys)
RN 404392-37-6 HCAPLUS
CN Silver alloy, base, Ag 90-100,Al 0.1-4.9,Pt 0.1-4.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ag	90 - 100	7440-22-4
Al	0.1 - 4.9	7429-90-5
Pt	0.1 - 4.9	7440-06-4

L105 ANSWER 12 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:791972 HCAPLUS
DN 135:347583
TI Silver alloy ornaments and the alloy with high corrosion resistance
IN Ueno, Takashi
PA Furuya Metal Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001303157	A	20011031	JP 2000-120590	20000421 <--
PRAI	JP 2000-120590		20000421 <--		

AB The ornaments are made of Ag alloys containing 0.1-5.0 weight% of Pd and 0.1-5.0 weight% of Al, Au, Pt, Cu, Ta, Cr, Ti, Co, and/or Si in total. Alternatively, the ornaments are made of Ag alloys containing 0.1-5.0 weight% of Ir, Pt, Ru, or Rh and 0.1-5.0 weight% of Cu, Al, and/or Ti in total. The Ag alloys having silver white color are also claimed. The corrosion-resistant alloys are useful for accessories (rings, necklaces, tie pins, etc.).
IT **371126-84-0**
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(Ag alloy with silver white color and high corrosion resistance for ornaments)
RN 371126-84-0 HCAPLUS
CN Silver alloy, base, Ag 90-100,Al 0.1-5,Pt 0.1-5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ag	90 - 100	7440-22-4

Al	0.1 -	5	7429-90-5
Pt	0.1 -	5	7440-06-4

L105 ANSWER 13 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:492171 HCAPLUS
DN 133:113753
TI Procedure for the fine tuning of single layer capacitors.
IN Comberg, Albert; Klee, Mareike Katharine
PA Philips Corporate Intellectual Property G.m.b.H., Germany
SO Ger. Offen., 6 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 19901541	A1	20000720	DE 1999-19901541	19990116 <--
PRAI DE 1999-19901541		19990116 <--		

AB The invention deals with a method of fine-tuning a network consisting of single layer capacitors on substrates, at least one bottom electrode, at least one dielec., at least one upper electrode and at least one circuit, with the circuit consisting of Al which is oxidized and penetrated by means of irradiation with focused laser light. The invention moreover concerns a method for fine-tuning a single layer capacitor, including a carrier substrate, a bottom electrode, a dielec. and an upper electrode, where focused laser radiation is used to heat the upper electrode and the bottom electrode and where the heating effect causes the electrodes to locally convert into elec. insulators by forming oxides in an oxidation process. With this method the active surfaces of the capacitor are decreased and the capacity is reduced to a desired value.
IT **284034-18-0**, Platinum, aluminum, silver
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electrode; procedure for the fine tuning of single layer capacitors)
RN 284034-18-0 HCAPLUS
CN Silver alloy, nonbase, Ag,Al,Pt (9CI) (CA INDEX NAME)

Component	Component Registry Number
Ag	7440-22-4
Al	7429-90-5
Pt	7440-06-4

L105 ANSWER 14 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1998:181839 HCAPLUS
DN 128:260167
TI Several precious metal materials for jewelery and their preparation
AU Luo, Yanbo; Li, Guanfang
CS Institute of Precious Metals, Kunming, 650221, Peop. Rep. China
SO Guijinshu (**1997**), 18(4), 49-52
CODEN: GUIJE7; ISSN: 1004-0676
PB Guijinshu Yanjiuso
DT Journal
LA Chinese
AB Three kinds of precious metal materials for jewelery and their preparation were introduced, they are precious metals plasticine, Spangold, a new jewelery alloy with an innovative surface finish and colored platinum products.

The properties and practical uses of the three kinds of materials were stated.

IT **134630-10-7**, Aluminum 22, copper 6, platinum 72
134630-11-8, Aluminum 21, copper 7, platinum 72
134630-12-9, Aluminum 21, copper 8, platinum 71
134630-13-0, Aluminum 21, copper 9, platinum 70
134630-14-1, Aluminum 21, copper 10, platinum 69
134630-15-2, Aluminum 20, copper 15, platinum 66
134630-16-3, Aluminum 18, copper 20, platinum 62
134630-18-5, Aluminum 22, copper 2, platinum 76
134630-19-6
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(several precious metal materials for jewelery and preparation)

RN 134630-10-7 HCAPLUS
CN Platinum alloy, base, Pt 72,Al 22,Cu 6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	72	7440-06-4
Al	22	7429-90-5
Cu	6	7440-50-8

RN 134630-11-8 HCAPLUS
CN Platinum alloy, base, Pt 72,Al 21,Cu 7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	72	7440-06-4
Al	21	7429-90-5
Cu	7	7440-50-8

RN 134630-12-9 HCAPLUS
CN Platinum alloy, base, Pt 71,Al 21,Cu 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	71	7440-06-4
Al	21	7429-90-5
Cu	8	7440-50-8

RN 134630-13-0 HCAPLUS
CN Platinum alloy, base, Pt 70,Al 21,Cu 9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	70	7440-06-4
Al	21	7429-90-5
Cu	9	7440-50-8

RN 134630-14-1 HCAPLUS
CN Platinum alloy, base, Pt 69,Al 21,Cu 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number

Pt	69	7440-06-4
Al	21	7429-90-5
Cu	10	7440-50-8

RN 134630-15-2 HCAPLUS
CN Platinum alloy, base, Pt 66,Al 20,Cu 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	66	7440-06-4
Al	20	7429-90-5
Cu	15	7440-50-8

RN 134630-16-3 HCAPLUS
CN Platinum alloy, base, Pt 62,Cu 20,Al 18 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	62	7440-06-4
Cu	20	7440-50-8
Al	18	7429-90-5

RN 134630-18-5 HCAPLUS
CN Platinum alloy, base, Pt 76,Al 22,Cu 2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	76	7440-06-4
Al	22	7429-90-5
Cu	2	7440-50-8

RN 134630-19-6 HCAPLUS
CN Platinum alloy, base, Pt 73,Al 22,Cu 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	73	7440-06-4
Al	22	7429-90-5
Cu	5	7440-50-8

L105 ANSWER 15 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1996:417683 HCAPLUS
DN 125:73883
TI Sputtering target material for thin film transistor
IN Kinoshita, Makoto
PA Mitsubishi Materials Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08100255	A	19960416	JP 1994-261229	19940930 <--
PRAI	JP 1994-261229		19940930 <--		

AB The material, comprising a composition containing 1-20 weight%-an alloy containing Nb, V,
Ti, Zr, Ni, Pt, and/or W and balanced Al, includes an intermetallic compound of Al and the alloy component having ≤30 μm-average grain size dispersed in a foundation containing a recryst. system of ≤30 μm average grain size. The target prevents abnormal elec. discharge during the sputtering and provides good thin film without particle generation.

IT **178442-68-7**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Sputtering target for thin film transistor)

RN 178442-68-7 HCAPLUS

CN Aluminum alloy, base, Al 86,Pt 7.5,W 6.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Al	86	7429-90-5
Pt	7.5	7440-06-4
W	6.2	7440-33-7

L105 ANSWER 16 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1994:170887 HCAPLUS

DN 120:170887

TI The development of colored platinum products for jewelry

AU Hurly, J.; Wedepohl, P.T.

CS Mintek, Randburg, 2125, S. Afr.

SO Precious Metals (**1993**), 17th, 141-51
CODEN: PRCMEU; ISSN: 8756-0917

DT Journal

LA English

AB Research into the development of colored platinum was initiated to stimulate the platinum-jewelry market and to meet the demand for greater variety in the design and color of platinum jewelry. Two products have been developed at Mintek: a colored-platinum intermetallic compound, known as Platigem, and a powder-metallurgy product called Goldina. The color of Platigem ranges from golden-yellow to orange to copper-pink. This material has gem-like qualities, is scratch-resistant, and has a unique fracture surface. The second colored platinum product has a warm golden tone, and is suitable for the production of perfume jewelry, including rings and broaches. The properties of these products are discussed with the aim of creating an awareness of their suitability for jewelry manufacture

IT **134630-10-7 134630-11-8 134630-12-9**
134630-13-0 134630-14-1 134630-16-3
134630-18-5 134630-19-6 153696-92-5
RL: PRP (Properties)
(colored products, for jewelry, properties of)

RN 134630-10-7 HCAPLUS

CN Platinum alloy, base, Pt 72,Al 22,Cu 6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	72	7440-06-4
Al	22	7429-90-5
Cu	6	7440-50-8

RN 134630-11-8 HCAPLUS

CN Platinum alloy, base, Pt 72,Al 21,Cu 7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	72	7440-06-4
Al	21	7429-90-5
Cu	7	7440-50-8

RN 134630-12-9 HCAPLUS
CN Platinum alloy, base, Pt 71,Al 21,Cu 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	71	7440-06-4
Al	21	7429-90-5
Cu	8	7440-50-8

RN 134630-13-0 HCAPLUS
CN Platinum alloy, base, Pt 70,Al 21,Cu 9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	70	7440-06-4
Al	21	7429-90-5
Cu	9	7440-50-8

RN 134630-14-1 HCAPLUS
CN Platinum alloy, base, Pt 69,Al 21,Cu 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	69	7440-06-4
Al	21	7429-90-5
Cu	10	7440-50-8

RN 134630-16-3 HCAPLUS
CN Platinum alloy, base, Pt 62,Cu 20,Al 18 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	62	7440-06-4
Cu	20	7440-50-8
Al	18	7429-90-5

RN 134630-18-5 HCAPLUS
CN Platinum alloy, base, Pt 76,Al 22,Cu 2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	76	7440-06-4
Al	22	7429-90-5
Cu	2	7440-50-8

RN 134630-19-6 HCAPLUS

CN Platinum alloy, base, Pt 73,Al 22,Cu 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	73	7440-06-4
Al	22	7429-90-5
Cu	5	7440-50-8

RN 153696-92-5 HCAPLUS
CN Platinum alloy, base, Pt 65,Al 20,Cu 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	65	7440-06-4
Al	20	7429-90-5
Cu	15	7440-50-8

L105 ANSWER 17 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1994:83773 HCAPLUS
DN 120:83773
TI Aesthetic surface enhancement of polished articles made of nonferrous alloys with martensitic phase
IN Wolff, Ira Mervyn; Cortie, Michael Bernard
PA Mintek, S. Afr.
SO Eur. Pat. Appl., 9 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 569239	A1	19931110	EP 1993-303519	19930506 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, NL, PT, SE				
	ZA 9302674	A	19950316	ZA 1993-2674	19930416 <--
	JP 06025810	A	19940201	JP 1993-105400	19930506 <--
	US 5503691	A	19960402	US 1994-348746	19941201 <--
PRAI	ZA 1992-3276	A	19920506 <--		
	ZA 1993-2674	A	19930416 <--		
	US 1993-57995	B1	19930505 <--		

AB The formed and polished articles made of nonferrous alloys with a martensitic structure are finished by heat treatment to promote the martensitic phase transformation on the polished surface for a decorative texture. The martensitic structure is optionally promoted by quenching the polished articles from high-temperature equilibrium phase structure. The decorative texture is optionally enhanced by etching or a reactive coating. The typical martensitic alloys suitable for the decorative treatment include Pt-9 Al-10% Cu and Au-22 Cu-31% Zn alloy.
IT **134630-23-2 152396-65-1**
RL: USES (Uses)
(polished, with martensitic structure, decorative surface texture by local heat treatment of)
RN 134630-23-2 HCAPLUS
CN Platinum alloy, base, Pt 81,Cu 10,Al 9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number

Pt	81	7440-06-4
Cu	10	7440-50-8
Al	9	7429-90-5

RN 152396-65-1 HCAPLUS
CN Platinum alloy, base, Pt 86,Al 9.5,Cu 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	86	7440-06-4
Al	9.5	7429-90-5
Cu	5	7440-50-8

L105 ANSWER 18 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1994:60227 HCAPLUS
DN 120:60227
TI Optical properties of colored platinum intermetallic compounds
AU Hurly, J.; Wedepohl, P. T.
CS Mintek, Randburg, 2125, S. Afr.
SO Journal of Materials Science (1993), 28(20), 5648-53
CODEN: JMTSAS; ISSN: 0022-2461
DT Journal
LA English
AB The optical properties of the intermetallic compound PtAl2 were altered by the addition of 5%-25% copper by mass. It was found that these addns. cause the color of the compound to change from the brass-yellow of PtAl2 through orange to copper-pink. The color of the intermetallic compds. was described using the CIELab and chromaticity color-measuring systems. The effect of the copper addns. on the lattice parameter and band structure is discussed, related to the associated change in color of the intermetallic compound The effect of the copper addns. on the phys. and mech. properties of the material was studied.
IT **134630-10-7 134630-11-8 134630-12-9**
134630-13-0 134630-14-1 134630-15-2
134630-16-3 134630-17-4 134630-18-5
134630-19-6 134630-20-9 134630-21-0
134630-23-2 134630-24-3 134630-25-4
134630-26-5 134630-27-6 134630-28-7
134630-29-8 134630-30-1 134656-67-0
134656-68-1 134656-69-2 134656-70-5
134656-71-6 134656-72-7 134656-73-8
134656-74-9 134656-75-0 134656-76-1
152163-62-7
RL: PRP (Properties)
(optical properties of colored, copper effect on)
RN 134630-10-7 HCAPLUS
CN Platinum alloy, base, Pt 72,Al 22,Cu 6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	72	7440-06-4
Al	22	7429-90-5
Cu	6	7440-50-8

RN 134630-11-8 HCAPLUS
CN Platinum alloy, base, Pt 72,Al 21,Cu 7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	72	7440-06-4
Al	21	7429-90-5
Cu	7	7440-50-8

RN 134630-12-9 HCAPLUS
CN Platinum alloy, base, Pt 71,Al 21,Cu 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	71	7440-06-4
Al	21	7429-90-5
Cu	8	7440-50-8

RN 134630-13-0 HCAPLUS
CN Platinum alloy, base, Pt 70,Al 21,Cu 9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	70	7440-06-4
Al	21	7429-90-5
Cu	9	7440-50-8

RN 134630-14-1 HCAPLUS
CN Platinum alloy, base, Pt 69,Al 21,Cu 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	69	7440-06-4
Al	21	7429-90-5
Cu	10	7440-50-8

RN 134630-15-2 HCAPLUS
CN Platinum alloy, base, Pt 66,Al 20,Cu 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	66	7440-06-4
Al	20	7429-90-5
Cu	15	7440-50-8

RN 134630-16-3 HCAPLUS
CN Platinum alloy, base, Pt 62,Cu 20,Al 18 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	62	7440-06-4
Cu	20	7440-50-8
Al	18	7429-90-5

RN 134630-17-4 HCAPLUS
CN Platinum alloy, base, Pt 58,Cu 25,Al 17 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	58	7440-06-4
Cu	25	7440-50-8
Al	17	7429-90-5

RN 134630-18-5 HCAPLUS
CN Platinum alloy, base, Pt 76,Al 22,Cu 2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	76	7440-06-4
Al	22	7429-90-5
Cu	2	7440-50-8

RN 134630-19-6 HCAPLUS
CN Platinum alloy, base, Pt 73,Al 22,Cu 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	73	7440-06-4
Al	22	7429-90-5
Cu	5	7440-50-8

RN 134630-20-9 HCAPLUS
CN Platinum alloy, base, Pt 54,Cu 30,Al 16 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	54	7440-06-4
Cu	30	7440-50-8
Al	16	7429-90-5

RN 134630-21-0 HCAPLUS
CN Platinum alloy, base, Pt 50,Cu 35,Al 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	50	7440-06-4
Cu	35	7440-50-8
Al	15	7429-90-5

RN 134630-23-2 HCAPLUS
CN Platinum alloy, base, Pt 81,Cu 10,Al 9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	81	7440-06-4
Cu	10	7440-50-8
Al	9	7429-90-5

RN 134630-24-3 HCAPLUS
CN Platinum alloy, base, Pt 78,Al 12,Cu 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	78	7440-06-4
Al	12	7429-90-5
Cu	10	7440-50-8

RN 134630-25-4 HCAPLUS
CN Platinum alloy, base, Pt 74,Cu 15,Al 11 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	74	7440-06-4
Cu	15	7440-50-8
Al	11	7429-90-5

RN 134630-26-5 HCAPLUS
CN Platinum alloy, base, Pt 65,Cu 25,Al 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	65	7440-06-4
Cu	25	7440-50-8
Al	10	7429-90-5

RN 134630-27-6 HCAPLUS
CN Platinum alloy, base, Pt 56,Cu 35,Al 8.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	56	7440-06-4
Cu	35	7440-50-8
Al	8.5	7429-90-5

RN 134630-28-7 HCAPLUS
CN Platinum alloy, base, Pt 50,Cu 42,Al 7.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	50	7440-06-4
Cu	42	7440-50-8
Al	7.5	7429-90-5

RN 134630-29-8 HCAPLUS
CN Platinum alloy, base, Pt 78,Al 17,Cu 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	78	7440-06-4
Al	17	7429-90-5
Cu	5	7440-50-8

RN 134630-30-1 HCAPLUS
CN Platinum alloy, base, Pt 74,Al 16,Cu 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	74	7440-06-4
Al	16	7429-90-5
Cu	10	7440-50-8

RN 134656-67-0 HCAPLUS
CN Platinum alloy, base, Pt 70,Al 16,Cu 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	70	7440-06-4
Al	16	7429-90-5
Cu	15	7440-50-8

RN 134656-68-1 HCAPLUS
CN Platinum alloy, base, Pt 66,Cu 20,Al 14 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	66	7440-06-4
Cu	20	7440-50-8
Al	14	7429-90-5

RN 134656-69-2 HCAPLUS
CN Platinum alloy, base, Pt 61,Al 29,Cu 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	61	7440-06-4
Al	29	7429-90-5
Cu	10	7440-50-8

RN 134656-70-5 HCAPLUS
CN Platinum alloy, base, Pt 58,Al 28,Cu 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	58	7440-06-4
Al	28	7429-90-5
Cu	15	7440-50-8

RN 134656-71-6 HCAPLUS
CN Platinum alloy, base, Pt 54,Al 26,Cu 20 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	54	7440-06-4
Al	26	7429-90-5
Cu	20	7440-50-8

RN 134656-72-7 HCAPLUS
CN Platinum alloy, base, Pt 69,Al 26,Cu 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	69	7440-06-4
Al	26	7429-90-5
Cu	5	7440-50-8

RN 134656-73-8 HCAPLUS
CN Platinum alloy, base, Pt 70,Cu 28,Al 2.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	70	7440-06-4
Cu	28	7440-50-8
Al	2.5	7429-90-5

RN 134656-74-9 HCAPLUS
CN Platinum alloy, base, Pt 50,Cu 42,Al 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	50	7440-06-4
Cu	42	7440-50-8
Al	8	7429-90-5

RN 134656-75-0 HCAPLUS
CN Platinum alloy, base, Pt 50,Cu 46,Al 4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	50	7440-06-4
Cu	46	7440-50-8
Al	4	7429-90-5

RN 134656-76-1 HCAPLUS
CN Platinum alloy, base, Pt 58,Cu 34,Al 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	58	7440-06-4
Cu	34	7440-50-8
Al	8	7429-90-5

RN 152163-62-7 HCAPLUS
CN Platinum alloy, base, Pt 77,Cu 15,Al 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	77	7440-06-4
Cu	15	7440-50-8
Al	8	7429-90-5

L105 ANSWER 19 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1991:518730 HCAPLUS

DN 115:118730
TI Decorative platinum aluminide alloys colored by addition of copper
IN Hurly, Janice
PA Mintek, S. Afr.; Western Platinum Ltd.
SO Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 421731	A1	19910410	EP 1990-310777	19901002 <--
	EP 421731	B1	19940817		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
	ZA 9007777	A	19910731	ZA 1990-7777	19900928 <--
	US 5045280	A	19910903	US 1990-589509	19900928 <--
	JP 03158430	A	19910708	JP 1990-267504	19901003 <--
PRAI	ZA 1989-7529	A	19891004 <--		

AB The decorative alloys optionally manufactured from PtAl2 (m.p. 1413.5°) and Cu contain Pt 50-81, Al 5-30, and Cu 1-47.5%. The color is yellow at 1-8 Cu, orange at 8-15, or red at 20-30% Cu. Vickers microhardness of the alloys is typically 500-900, and is decreased by low Al content. Thus the red alloy consisted of PtAl2 with 20% Cu, and showed m.p. of 1335.3°.
IT **134630-10-7 134630-11-8 134630-12-9**
134630-13-0 134630-14-1 134630-15-2
134630-16-3 134630-17-4 134630-18-5
134630-19-6 134630-20-9 134630-21-0
134630-22-1 134630-23-2
RL: USES (Uses)
(decorative for jewelry, color parameters of)
RN 134630-10-7 HCAPLUS
CN Platinum alloy, base, Pt 72,Al 22,Cu 6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	72	7440-06-4
Al	22	7429-90-5
Cu	6	7440-50-8

RN 134630-11-8 HCAPLUS
CN Platinum alloy, base, Pt 72,Al 21,Cu 7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	72	7440-06-4
Al	21	7429-90-5
Cu	7	7440-50-8

RN 134630-12-9 HCAPLUS
CN Platinum alloy, base, Pt 71,Al 21,Cu 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	71	7440-06-4
Al	21	7429-90-5
Cu	8	7440-50-8

RN 134630-13-0 HCAPLUS
CN Platinum alloy, base, Pt 70,Al 21,Cu 9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	70	7440-06-4
Al	21	7429-90-5
Cu	9	7440-50-8

RN 134630-14-1 HCAPLUS
CN Platinum alloy, base, Pt 69,Al 21,Cu 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	69	7440-06-4
Al	21	7429-90-5
Cu	10	7440-50-8

RN 134630-15-2 HCAPLUS
CN Platinum alloy, base, Pt 66,Al 20,Cu 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	66	7440-06-4
Al	20	7429-90-5
Cu	15	7440-50-8

RN 134630-16-3 HCAPLUS
CN Platinum alloy, base, Pt 62,Cu 20,Al 18 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	62	7440-06-4
Cu	20	7440-50-8
Al	18	7429-90-5

RN 134630-17-4 HCAPLUS
CN Platinum alloy, base, Pt 58,Cu 25,Al 17 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	58	7440-06-4
Cu	25	7440-50-8
Al	17	7429-90-5

RN 134630-18-5 HCAPLUS
CN Platinum alloy, base, Pt 76,Al 22,Cu 2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	76	7440-06-4
Al	22	7429-90-5
Cu	2	7440-50-8

RN 134630-19-6 HCAPLUS
CN Platinum alloy, base, Pt 73,Al 22,Cu 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	73	7440-06-4
Al	22	7429-90-5
Cu	5	7440-50-8

RN 134630-20-9 HCAPLUS
CN Platinum alloy, base, Pt 54,Cu 30,Al 16 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	54	7440-06-4
Cu	30	7440-50-8
Al	16	7429-90-5

RN 134630-21-0 HCAPLUS
CN Platinum alloy, base, Pt 50,Cu 35,Al 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	50	7440-06-4
Cu	35	7440-50-8
Al	15	7429-90-5

RN 134630-22-1 HCAPLUS
CN Platinum alloy, base, Pt 78,Cu 15,Al 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	78	7440-06-4
Cu	15	7440-50-8
Al	8	7429-90-5

RN 134630-23-2 HCAPLUS
CN Platinum alloy, base, Pt 81,Cu 10,Al 9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	81	7440-06-4
Cu	10	7440-50-8
Al	9	7429-90-5

IT **135797-05-6 135797-06-7**
RL: USES (Uses)
(decorative, for jewelry)
RN 135797-05-6 HCAPLUS
CN Platinum alloy, base, Pt 50-81,Cu 1-48,Al 5-30 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number

Pt	50	-	81	7440-06-4
Cu	1	-	48	7440-50-8
Al	5	-	30	7429-90-5

RN 135797-06-7 HCAPLUS
CN Platinum alloy, base, Pt 57-80,Al 12-30,Cu 5-30 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
Pt	57	-	80	7440-06-4
Al	12	-	30	7429-90-5
Cu	5	-	30	7440-50-8

IT **135797-08-9**
RL: USES (Uses)
(decorative, for jewelry with orange color)
RN 135797-08-9 HCAPLUS
CN Platinum alloy, base, Pt 63-70,Al 18-21,Cu 8-15 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
Pt	63	-	70	7440-06-4
Al	18	-	21	7429-90-5
Cu	8	-	15	7440-50-8

IT **135797-09-0**
RL: USES (Uses)
(decorative, for jewelry with red color)
RN 135797-09-0 HCAPLUS
CN Platinum alloy, base, Pt 54-62,Cu 20-30,Al 15-20 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
Pt	54	-	62	7440-06-4
Cu	20	-	30	7440-50-8
Al	15	-	20	7429-90-5

IT **135797-07-8**
RL: USES (Uses)
(decorative, for jewelry with yellow color)
RN 135797-07-8 HCAPLUS
CN Platinum alloy, base, Pt 70-77,Al 20-23,Cu 1-8 (9CI) (CA INDEX NAME)

Component	Component Percent			Component Registry Number
Pt	70	-	77	7440-06-4
Al	20	-	23	7429-90-5
Cu	1	-	8	7440-50-8

IT **134630-24-3 134630-25-4 134630-26-5**
134630-27-6 134630-28-7 134630-29-8
134630-30-1 134656-67-0 134656-68-1
134656-69-2 134656-70-5 134656-71-6
134656-72-7 134656-73-8 134656-74-9
134656-75-0 134656-76-1
RL: USES (Uses)

(decorative, for jewelry, color parameters of)
RN 134630-24-3 HCAPLUS
CN Platinum alloy, base, Pt 78,Al 12,Cu 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	78	7440-06-4
Al	12	7429-90-5
Cu	10	7440-50-8

RN 134630-25-4 HCAPLUS
CN Platinum alloy, base, Pt 74,Cu 15,Al 11 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	74	7440-06-4
Cu	15	7440-50-8
Al	11	7429-90-5

RN 134630-26-5 HCAPLUS
CN Platinum alloy, base, Pt 65,Cu 25,Al 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	65	7440-06-4
Cu	25	7440-50-8
Al	10	7429-90-5

RN 134630-27-6 HCAPLUS
CN Platinum alloy, base, Pt 56,Cu 35,Al 8.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	56	7440-06-4
Cu	35	7440-50-8
Al	8.5	7429-90-5

RN 134630-28-7 HCAPLUS
CN Platinum alloy, base, Pt 50,Cu 42,Al 7.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	50	7440-06-4
Cu	42	7440-50-8
Al	7.5	7429-90-5

RN 134630-29-8 HCAPLUS
CN Platinum alloy, base, Pt 78,Al 17,Cu 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	78	7440-06-4
Al	17	7429-90-5
Cu	5	7440-50-8

RN 134630-30-1 HCAPLUS
CN Platinum alloy, base, Pt 74,Al 16,Cu 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	74	7440-06-4
Al	16	7429-90-5
Cu	10	7440-50-8

RN 134656-67-0 HCAPLUS
CN Platinum alloy, base, Pt 70,Al 16,Cu 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	70	7440-06-4
Al	16	7429-90-5
Cu	15	7440-50-8

RN 134656-68-1 HCAPLUS
CN Platinum alloy, base, Pt 66,Cu 20,Al 14 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	66	7440-06-4
Cu	20	7440-50-8
Al	14	7429-90-5

RN 134656-69-2 HCAPLUS
CN Platinum alloy, base, Pt 61,Al 29,Cu 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	61	7440-06-4
Al	29	7429-90-5
Cu	10	7440-50-8

RN 134656-70-5 HCAPLUS
CN Platinum alloy, base, Pt 58,Al 28,Cu 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	58	7440-06-4
Al	28	7429-90-5
Cu	15	7440-50-8

RN 134656-71-6 HCAPLUS
CN Platinum alloy, base, Pt 54,Al 26,Cu 20 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	54	7440-06-4
Al	26	7429-90-5
Cu	20	7440-50-8

RN 134656-72-7 HCAPLUS
CN Platinum alloy, base, Pt 69,Al 26,Cu 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	69	7440-06-4
Al	26	7429-90-5
Cu	5	7440-50-8

RN 134656-73-8 HCAPLUS
CN Platinum alloy, base, Pt 70,Cu 28,Al 2.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	70	7440-06-4
Cu	28	7440-50-8
Al	2.5	7429-90-5

RN 134656-74-9 HCAPLUS
CN Platinum alloy, base, Pt 50,Cu 42,Al 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	50	7440-06-4
Cu	42	7440-50-8
Al	8	7429-90-5

RN 134656-75-0 HCAPLUS
CN Platinum alloy, base, Pt 50,Cu 46,Al 4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	50	7440-06-4
Cu	46	7440-50-8
Al	4	7429-90-5

RN 134656-76-1 HCAPLUS
CN Platinum alloy, base, Pt 58,Cu 34,Al 8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	58	7440-06-4
Cu	34	7440-50-8
Al	8	7429-90-5

L105 ANSWER 20 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1990:60929 HCAPLUS
DN 112:60929
TI Icosahedral, decagonal, and amorphous phases in aluminum-copper-transition metal systems
AU Tsai, An Pang; Inoue, Akihisa; Masumoto, Tsuyoshi
CS Mater. Sci., Tohoku Univ., Sendai, 980, Japan
SO Materials Transactions, JIM (1989), 30(9), 666-76

CODEN: MTJIEY; ISSN: 0916-1821
DT Journal
LA English
AB Rapidly solidified phases in Al-Cu-M ternary alloys containing 15-20 Cu and 10 atomic%M change, with the group number of transition metal M, in the sequence of an amorphous phase for Y, La, Ti, Hg, or V, followed by an icosahedral (I) phase for Cr, Mn, Fe, Ru, or Os, a decagonal (D) phase for Co or Rh, and a crystalline phase for Ni, Pd, or Pt. The I-phase in Al65Cu20(Fe, Ru, or Os)15 and the D-phase in Al65Cu15(Co or Rh)20 were thermodynamically stable, and the amorphous Al75Cu15V10 phase transformed to an I-phase by annealing. The formation of the stable I- and D-phases was examined in terms of the electronic structure parameters (Kp and 2kF), the atomic size factor (λ), and the outer electron per atom ratio (e/a). Their stable quasicryst. phases exist in narrow composition ranges where the criteria of e/a .simeq. 1.75, λ = 0.09, and Kp/2kF .simeq. 1.0 are satisfied, though the metastable I- and D-phases are formed in relatively wide ranges of s/a = 1.4-1.8, λ = 0.06-0.11, and Kp/2kF = 1.0-1.3. The formation tendency and stability of the I- and D-phases are enhanced when the energy gap lies near the Fermi surface.
IT **124776-39-2 124776-50-7 124776-64-3**
RL: PRP (Properties)
(rapidly solidified phase in)
RN 124776-39-2 HCAPLUS
CN Platinum alloy, base, Pt 38,Al 37,Cu 25 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	38	7440-06-4
Al	37	7429-90-5
Cu	25	7440-50-8

RN 124776-50-7 HCAPLUS
CN Platinum alloy, base, Pt 49,Al 29,Cu 21 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	49	7440-06-4
Al	29	7429-90-5
Cu	21	7440-50-8

RN 124776-64-3 HCAPLUS
CN Platinum alloy, base, Pt 59,Al 27,Cu 14 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pt	59	7440-06-4
Al	27	7429-90-5
Cu	14	7440-50-8

IT **124749-64-0**
RL: USES (Uses)
(rapidly solidified, phases in)
RN 124749-64-0 HCAPLUS
CN Aluminum alloy, base, Al 41,Pt 40,Cu 19 (9CI) (CA INDEX NAME)

Component Component Component

	Percent	Registry Number
Al	41	7429-90-5
Pt	40	7440-06-4
Cu	19	7440-50-8

L105 ANSWER 21 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1986:134416 HCAPLUS
DN 104:134416
OREF 104:21187a,21190a
TI Ornamental copper alloys with golden color
IN Tamemasa, Hiroshi
PA Tanaka Noble Metal Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 2 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 60177146	A	19850911	JP 1984-32897	19840223 <--
	JP 03068092	B	19911025		
PRAI	JP 1984-32897		19840223	<--	

AB The ornamental Cu alloys containing Al 2-10 and a noble metal 0.01-1.8% have high corrosion resistance and workability, and can be used in place of ornamental Au alloys. Thus, gold-coloredCu alloy containing Al 3.0 and Au 1.5% showed cold workability 95% and no discoloration in synthetic sweat for 240 h, compared with 65% and gray-black discoloration for Cu-30% Zn brass.
IT **101050-97-9**
RL: USES (Uses)
(ornamental, formability and sweat resistance of golden-colored)
RN 101050-97-9 HCAPLUS
CN Copper alloy, base, Cu 93,Al 7,Pt 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Cu	93	7440-50-8
Al	7	7429-90-5
Pt	0.2	7440-06-4

L105 ANSWER 22 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1984:615180 HCAPLUS
DN 101:215180
OREF 101:32575a,32578a
TI Sliding electric contact alloys
PA Tanaka Noble Metal Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 2 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 59113144	A	19840629	JP 1982-223487	19821220 <--
	JP 02060733	B	19901218		
PRAI	JP 1982-223487		19821220	<--	

AB To the conventional alloy containing Pt 0.1-1, Pd 42-44, Ag 39-41, and Cu 15.5-17.5% there is added ≥1 of Al, Ga, Mn, and Ni 0.5-15%. A 0.7 + 8 mm wire was tested at 0.6 A, 12 V, 1000 rpm, 120-130 m/min, and contact force 100 g for 7 h. The wear was 3.2-4.2 mg and contact resistivity 12-60 mΩ, compared to 8.1 and 13-322 with the original. Thus, 7% Al was added to a Pt 0.5, Pd 43, Ag 40, Cu 16.5% alloy.

IT **93230-81-0**
RL: TEM (Technical or engineered material use); USES (Uses)
(for elec. contacts, sliding)

RN 93230-81-0 HCAPLUS

CN Palladium alloy, base, Pd 40,Ag 37,Cu 15,Al 6.5,Pt 0.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pd	40	7440-05-3
Ag	37	7440-22-4
Cu	15	7440-50-8
Al	6.5	7429-90-5
Pt	0.5	7440-06-4

L105 ANSWER 23 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1984:615175 HCAPLUS

DN 101:215175

OREF 101:32575a,32578a

TI Sliding electric contact alloy

PA Tanaka Noble Metal Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 2 pp.
CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 59118833	A	19840709	JP 1982-230651	19821225 <--
	JP 02059231	B	19901211		
PRAI	JP 1982-230651		19821225 <--		

AB The conventional alloy consisting of Au 19-21, Pt 4-6, Pd 44-46, and Ag 29-31% is addnl. alloyed with ≥1 Al, Ga, Mn, Ni, Ge, and Si 0.5-15%. Thus, the alloy in wire form was tested at 0.6 A, 12 V, 1000 rpm, 120-130 m/min, and contact force 100 g for 7 h. The wear was 2.5-3.3 mg and contact resistance was 12-60 mΩ, compared to 7.9 mg and 12-61 mΩ for the original alloy. Al 7 was added to Au 20, Pt 5, Pd 45, Ag 30%.

IT **93067-74-4**
RL: TEM (Technical or engineered material use); USES (Uses)
(for sliding elec. contacts)

RN 93067-74-4 HCAPLUS

CN Palladium alloy, base, Pd 42,Ag 28,Au 19,Al 6.5,Pt 4.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Pd	42	7440-05-3
Ag	28	7440-22-4
Au	19	7440-57-5
Al	6.5	7429-90-5

Pt	4.7	7440-06-4

L105 ANSWER 24 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1979:197052 HCAPLUS
DN 90:197052
OREF 90:31201a,31204a
TI Amperometric titration of platinum(II) by some oxidants
AU Zakharov, V. A.; Gavva, N. F.; Songina, O. A.
CS S. M. Kirov Kazakh State Univ., Alma-Ata, USSR
SO Zhurnal Analiticheskoi Khimii (1979), 34(1), 174-7
CODEN: ZAKHA8; ISSN: 0044-4502
DT Journal
LA Russian
AB The rate of Pt(II) oxidation by MnO4-, Cr2O72-, and VO3- is a function of differences in formal redox potentials for the systems studied. Optimum conditions exist in 0.5-1M H2SO4, 6-8M H2SO4, and 8-10M H2SO4 for Pt(II) titration in a medium of MnO4-, Cr2O72-, and VO3-, resp. The lower detection limit is 0.5, 1, and 2 μg Pt/mL, resp. Pd(II), Rh(III), Ru(IV), Ir(IV), Mn(II), Ni(II), Mg(II), Bi(III), In(III), Cu(II), and Cl- do not interfere; Ir(III) and Fe(II) do. The method was used for the determination of Pt
in alloys by amperometric titration with the oxidants.
IT **70246-78-5**
RL: AMX (Analytical matrix); ANST (Analytical study)
(platinum determination in, by amperometric titration)
RN 70246-78-5 HCAPLUS
CN Platinum alloy, base, Pt,Al,Pd (9CI) (CA INDEX NAME)

Component	Component Registry Number
Pt	7440-06-4
Al	7429-90-5
Pd	7440-05-3

L105 ANSWER 25 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1976:529158 HCAPLUS
DN 85:129158
OREF 85:20699a,20702a
TI Age-hardenable gold alloy
IN Kawanishi, Hitokazu
PA Suwa Seikosha Co., Ltd., Japan
SO Jpn. Tokkyo Koho, 4 pp.
CODEN: JAXXAD
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 51005338	B	19760219	JP 1970-78802	19700910 <--
PRAI	JP 1970-78802	A	19700910 <--		

AB The Au alloy contains Cu 10-50, Al 5-15, and Au ≥30%. Optional addns. are Zn 0.1-15, Ni 0.1-25, Ag 0.01-25, Pt 0.1-15, Pd 0.1-20, and/or (Cr, Ti, Zr, Si, Be, Mg and/or Cd) 0.01-5%. The alloy is useful for jewelry, pens, and watch cases. Thus, the Au alloy [**60411-82-7**] containing Al 10.2, Cu 30.5, Ag 4.2, and Pt 4.3 was solution treated at 780° and aged at 360°. The Vickers hardness was 392, and the corrosion resistance was satisfactory.

IT **60411-82-7**
RL: USES (Uses)
(age-hardenable corrosion-resistant, for jewelry and watch cases)
RN 60411-82-7 HCAPLUS
CN Gold alloy, base, Au 51,Cu 30,Al 10,Pt 4.3,Ag 4.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Au	51	7440-57-5
Cu	30	7440-50-8
Al	10	7429-90-5
Pt	4.3	7440-06-4
Ag	4.2	7440-22-4

L105 ANSWER 26 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1976:52987 HCAPLUS
DN 84:52987
OREF 84:8633a,8636a
TI Composite beam lead metallization
IN Pille, Hans J.
PA Motorola, Inc., USA
SO U.S., 5 pp.
CODEN: USXXAM
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3921200	A	19751118	US 1974-461079	19740415 <--
PRAI	US 1974-461079	A	19740415 <--		

AB A Au-compatible metallization system for semiconductor devices consists of a Au alloy containing Pt 0.5-1.75 and Al 0.1-0.5 weight %. This alloy can be used for contact pads on the semiconductor die and for via connectors used in connecting one metal layer to a 2nd metal layer. The metal layers can be Al or Si-Al. The metallization system includes a Au wire from the terminal post on the package to the Au-Pt-Al contact pad. A Pt layer is formed on a passivation layer over a semiconductor device which contains an opening which exposes a portion of the underlying Si-Al layer, and a Au layer is formed on the Pt. The undesired portions of the Pt and Au layers are removed by sputter etching. If the temperature of the device exceeds 425° during etching, the Au-Pt-Al alloy is formed during this process. If the temperature is kept at ≤425°, a sep. alloying step must be carried out.
IT **58049-14-2**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(elec. conductors and contacts from, for semiconductor devices)
RN 58049-14-2 HCAPLUS
CN Gold alloy, base, Au 98-99,Pt 0.5-1.8,Al 0.1-0.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Au	98 - 99	7440-57-5
Pt	0.5 - 1.8	7440-06-4
Al	0.1 - 0.5	7429-90-5

L105 ANSWER 27 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1941:10980 HCAPLUS
DN 35:10980
OREF 35:1738g-h
TI Age-hardening precious metal alloys
AU Vines, R. F.; Wise, E. M.
SO Am. Soc. Metals, Symposium on Age Hardening of Metals (**1939**) 190-226
DT Journal
LA Unavailable
AB Chemical composition, hardness, constitutional diagrams and com. uses, particularly dental alloys, and the various theories presented to explain the observed age-hardening effects are discussed briefly for the Ag-Cu, Au-Ni, Au-Pt, Au-Cu, Pd-Cu, Pt-Cu, Ag-Al, Au-Ag-Cu, Pd-Ag-Cu, Pt-Pd-Au, Pd-Au-Ag-Cu and Pt-Au-Ag-Cu systems. A bibliog. is included.
IT **710306-69-7**, Silver alloys, aluminum-Cu-Au-Pd-Pt-
(age-hardening effects on)
RN 710306-69-7 HCAPLUS
CN Silver alloys, aluminum-Cu-Au-Pd-Pt- (4CI) (CA INDEX NAME)

Component	Component Registry Number
Ag	7440-22-4
Al	7429-90-5
Au	7440-57-5
Cu	7440-50-8
Pd	7440-05-3
Pt	7440-06-4

L105 ANSWER 28 OF 28 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1927:21760 HCAPLUS
DN 21:21760
OREF 21:2656e-f
TI Gold alloys
IN Korsunsky, M. G.
DT **Patent**
LA Unavailable
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI GB 254979		19260714	GB 1925-32238	19250414 <--

AB Au alloys amenable to heat treatment contain Si or Al together with a substantially greater proportion of Ni, Co, Cr, Fe, Cu, Pd, or Pt, with or without Ag, Cu or Zn. The alloys may be heated to 750-1000°, quenched, reheated to 200-600° and cooled.
IT **705932-11-2P**, Platinum alloys, aluminum-Au-
RL: PREP (Preparation)
(preparation of)
RN 705932-11-2 HCAPLUS
CN Platinum alloys, aluminum-Au- (3CI) (CA INDEX NAME)

Component	Component Registry Number
Al	7429-90-5
Au	7440-57-5
Pt	7440-06-4

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=> L101          4 S L99 AND CAT/RL
L102           3 S L99 AND CATAL?/SC,SX
L103           3 S L99 AND B01J/IPC,IC,ICM,ICS
L104           4 S L100-L103
L105          28 S L99 NOT L104

     FILE 'HCAPLUS' ENTERED AT 16:04:51 ON 12 FEB 2008

     FILE 'REGISTRY' ENTERED AT 16:06:50 ON 12 FEB 2008
L106           1 S PLATINUM/CN

     FILE 'HCAPLUS' ENTERED AT 16:06:54 ON 12 FEB 2008
L107      155348 S L106
L108       68478 S L107 AND L54

     FILE 'REGISTRY' ENTERED AT 16:07:28 ON 12 FEB 2008
L109           1 S 57621-59-7
L110        1433 S 7429-90-5/CRN AND 7440-06-4/CRN
L111         126 S L110 AND 2/ELC.SUB

     FILE 'HCAPLUS' ENTERED AT 16:08:17 ON 12 FEB 2008
L112         682 S L109,L111
L113       16486 S L108 AND L106(L)CAT/RL AND L54(L)CAT/RL
L114          23 S L112 AND L111(L)CAT/RL
L115       16507 S L113,L114
L116          51 S L115 AND L19
L117          42 S L116 NOT L77,L104,L105
L118          15 S L117 AND L15
L119          11 S L117 AND L1(L)PREP+NT/RL
L120          19 S L118,L119
L121          19 S L120 AND L19
L122          23 S L117 NOT L121

=> d bib abs hitind hitstr retable tot l121

L121 ANSWER 1 OF 19  HCAPLUS  COPYRIGHT 2008 ACS on STN
AN   2003:511282  HCAPLUS
DN   139:85777
TI   Ammoxidation of alkanes into nitriles using hydrogenated metallo
     oxynitride catalysts
IN   Prada Silvy, Ricardo; Florea Popescu, Mihaela; Grange, Paul
PA   Universite Catholique de Louvain, Belg.
SO   PCT Int. Appl., 31 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.         DATE
     ---------------     ----   --------    --------------------    --------
PI   WO 2003053913        A1     20030703    WO 2002-EP14575         20021219 <--
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA,
             UG, US, UZ, VN, YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
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FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2002361016 A1 20030709 AU 2002-361016 20021219 <--
EP 1476420 A1 20041117 EP 2002-795234 20021219 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK
PRAI EP 2001-870294 A 20011221 <--
WO 2002-EP14575 W 20021219 <--

AB A process for the ammoxidn. of an alkane (e.g., propane into acrylonitrile) comprises contacting the alkane with ammonia and mol. oxygen in the presence of a hydrogenated metallo oxynitride catalyst.

IC ICM C07C0253-24
ICS B01J0027-24

CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 23, 48, 67

IT **7429-90-5**, Aluminum, uses 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-93-2, Lithium, uses **7439-95-4**, Magnesium, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-04-2, Osmium, uses **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses 7440-09-7, Potassium, uses 7440-15-5, Rhenium, uses 7440-17-7, Rubidium, uses 7440-18-8, Ruthenium, uses 7440-21-3, Silicon, uses **7440-22-4**, Silver, uses 7440-23-5, Sodium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses **7440-33-7**, Tungsten, uses 7440-42-8, Boron, uses 7440-46-2, Cesium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses **7440-50-8**, Copper, uses 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses **7440-57-5**, Gold, uses 7440-62-2, Vanadium, uses 7727-37-9, Nitrogen, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(in hydrogenated metallo oxynitride ammoxidn. catalysts for the ammoxidn. of alkanes into nitriles)

IT **7429-90-5**, Aluminum, uses **7439-95-4**, Magnesium, uses **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses **7440-22-4**, Silver, uses **7440-33-7**, Tungsten, uses **7440-50-8**, Copper, uses **7440-57-5**, Gold, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(in hydrogenated metallo oxynitride ammoxidn. catalysts for the ammoxidn. of alkanes into nitriles)

RN 7429-90-5 HCAPLUS
CN Aluminum (CA INDEX NAME)

Al

RN 7439-95-4 HCAPLUS
CN Magnesium (CA INDEX NAME)

Mg

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS

CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

RN 7440-33-7 HCAPLUS
CN Tungsten (CA INDEX NAME)

W

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

RN 7440-57-5 HCAPLUS
CN Gold (CA INDEX NAME)

Au

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cernix	1997			FR 2741612 A	HCAPLUS
Inst Angewandte Chemie	2001			EP 1136120 A	HCAPLUS
Umezawa, T	1995			US 5472925 A	HCAPLUS

L121 ANSWER 2 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:319472 HCAPLUS
DN 134:328607
TI Plasma-catalytic production of ammonia by gas discharge
IN Gieshoff, Jurgen; Lang, Jurgen
PA DMC2 Degussa Metals Catalysts Cerdec A.-G., Germany
SO Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1095907	A2	20010502	EP 2000-119056	20000902 <--
	EP 1095907	A3	20020327		
	EP 1095907	B1	20071226		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, CY

DE 19951976	A1	20010510	DE 1999-19951976	19991028 <--
AT 382029	T	20080115	AT 2000-119056	20000902 <--
US 6471932	B1	20021029	US 2000-693835	20001023 <--
JP 2001151507	A	20010605	JP 2000-325435	20001025 <--

PRAI DE 1999-19951976 A 19991028 <--

AB NH3 is manufactured by a plasma-catalytic process, whereby a N2 and water vapor-containing gas flow is fed through an elec. discharge, whose discharge tube is arranged with a catalyst, which contains a metal selected from Ti, Zr, Hf, V,Nb, Ta, Cr, Mo, W, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Mn, and Cu on a catalyst support. As gas discharge is suitable a dielec. hindered discharge with a frequency of 50 Hz-1 MHz, microwave-discharge, corona discharge, or mixed discharges. The gas flow contains water vapor and N2 in a molar ratio of (100:1)-(10:1). The catalyst support consists of titania, alumina, silica, cerium oxide, zirconia, zeolite, or mixts. and mixed oxides with a sp. surface >5 m2/g. The catalyst and the catalyst support is presented as shaped body, whereby the catalytic active components are placed in the surface. The catalyst is deposited as cover coating on the shaped bodies like dielec. ceramic, or glass, optionally organic polymers with an insulation resistance of >106Ω*cm.

IC ICM **C01C0003-02**

CC 49-8 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67, 76

IT 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-04-2, Osmium, uses **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-32-6, Titanium, uses **7440-33-7**, Tungsten, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses **7440-50-8**, Copper, uses 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses 7631-86-9, Silica, uses 11129-18-3, Cerium oxide 13463-67-7, Titania, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(plasma-catalytic production of ammonia by gas discharge)

IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses **7440-33-7**, Tungsten, uses **7440-50-8**, Copper, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(plasma-catalytic production of ammonia by gas discharge)

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-33-7 HCAPLUS
CN Tungsten (CA INDEX NAME)

W

RN 7440-50-8 HCAPLUS

CN Copper (CA INDEX NAME)

Cu

L121 ANSWER 3 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:814415 HCAPLUS
DN 133:337296
TI Process for nondestructive heating and supply of hot ammonia or hot ammonia containing feed gas
IN Gelblum, Peter Gideon; Barnes, John J.; Bletsos, Ioannis V.; Herron, Norman; Kim, Tae Hoon
PA E. I. Du Pont de Nemours & Co., USA
SO PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000068143	A1	20001116	WO 2000-US11747	20000501 <--
	W: BR, CA, CN, CZ, ID, JP, KR, MX, PL, SG, SK				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 6238634	B1	20010529	US 1999-305731	19990505 <--
	CA 2370185	A1	20001116	CA 2000-2370185	20000501 <--
	BR 2000011223	A	20020319	BR 2000-11223	20000501 <--
	EP 1189838	A1	20020327	EP 2000-928666	20000501 <--
	EP 1189838	B1	20030723		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2002544101	T	20021224	JP 2000-617126	20000501 <--
	TW 593132	B	20040621	TW 2000-89108526	20000504 <--
	MX 2001PA11168	A	20020506	MX 2001-PA11168	20011101 <--
PRAI	US 1999-305731	A	19990505 <--		
	US 1998-84239P	P	19980506 <--		
	WO 2000-US11747	W	20000501 <--		

AB A process is described for nondestructive heating and supplying of ammonia feed gas wherein high quality ammonia (typically >90% and as high as 99 %) is preserved at temps. well in excess of the conventional limit of 230° (typically from 400° to 700°) by controlling the selection of metal surfaces in contact with the hot gas, the bulk temperature of the gas, the wall temperature, the pressure, the contact time, and the spatial surface d. Such hot gases are particularly useful for the manufacture of **hydrogen cyanide**.
IC ICM C01B0021-28
ICS **C01C0003-02**; B01J0019-02
CC 49-11 (Industrial Inorganic Chemicals)
Section cross-reference(s): 47, 48
ST hot ammonia supply nondestructive heating **hydrogen cyanide** manuf
IT Heat transfer
Heating
(process for nondestructive heating and supply of hot ammonia or hot ammonia containing feed gas in manufacture of **hydrogen cyanide**)
IT Platinum-group metals

RL: CAT (Catalyst use); USES (Uses)
(process for nondestructive heating and supply of hot ammonia or hot ammonia containing feed gas in manufacture of **hydrogen cyanide**
)

IT Metals, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(process for nondestructive heating and supply of hot ammonia or hot ammonia containing feed gas in manufacture of **hydrogen cyanide**
)

IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses **7440-57-5**, Gold, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(process for nondestructive heating and supply of hot ammonia or hot ammonia containing feed gas in manufacture of **hydrogen cyanide**
)

IT 7440-02-0, Nickel, uses 11068-72-7, SS310 11109-50-5 12606-02-9, Inconel 600 12611-78-8, AISI321 12671-80-6
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(process for nondestructive heating and supply of hot ammonia or hot ammonia containing feed gas in manufacture of **hydrogen cyanide**
)

IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(process for nondestructive heating and supply of hot ammonia or hot ammonia containing feed gas in manufacture of **hydrogen cyanide**
)

IT 7440-59-7, Helium, processes 7664-41-7, Ammonia, processes
RL: **PEP (Physical, engineering or chemical process)**; **PROC (Process)**
(process for nondestructive heating and supply of hot ammonia or hot ammonia containing feed gas in manufacture of **hydrogen cyanide**
)

IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses **7440-57-5**, Gold, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(process for nondestructive heating and supply of hot ammonia or hot ammonia containing feed gas in manufacture of **hydrogen cyanide**
)

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-57-5 HCAPLUS
CN Gold (CA INDEX NAME)

Au

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture); PREP (Preparation)**
(process for nondestructive heating and supply of hot ammonia or hot ammonia containing feed gas in manufacture of **hydrogen cyanide**
)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Andrussow	1933			US 1934838 A	HCAPLUS
Braun & Co C F	1984			EP 0113524 A	HCAPLUS
Jenks, W	1963			US 3104945 A	
Karavaev, M	1990		32	Khim Prom St (Moscow	HCAPLUS
Longfield, J	1969			US 3455659 A	

L121 ANSWER 4 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:157618 HCAPLUS
DN 132:209569
TI Oxygen ion conductive solid state ceramic membranes for catalytic membrane reactors
IN Schwartz, Michael; White, James H.; Sammels, Anthony F.
PA Eltron Research, Inc., USA
SO U.S., 32 pp., Cont.-in-part of U.S. Ser. No. 163,620, abandoned.
CODEN: USXXAM
DT **Patent**
LA English
FAN.CNT 8

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 6033632	A	20000307	US 1996-639781	19960429 <--
CA 2252539	A1	19971106	CA 1996-2252539	19960913 <--
CA 2252539	C	20030506		
WO 9741060	A1	19971106	WO 1996-US14841	19960913 <--
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9669791	A	19971119	AU 1996-69791	19960913 <--
AU 737377	B2	20010816		
EP 896566	A1	19990217	EP 1996-930896	19960913 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
US 6355093	B1	20020312	US 1997-960182	19971029 <--
US 6165431	A	20001226	US 1999-286829	19990406 <--
US 6214757	B1	20010410	US 1999-412997	19991005 <--
US 2001002990	A1	20010607	US 2000-748344	20001222 <--
US 6592782	B2	20030715		

	US 2002022568	A1	20020221	US 2001-905651	20010713 <--
	US 2002054845	A1	20020509	US 2001-929870	20010814 <--
	US 6949230	B2	20050927		
PRAI	US 1993-163620	B2	19931208 <--		
	US 1996-639781	A	19960429 <--		
	WO 1996-US14841	W	19960913 <--		
	US 1999-286829	A2	19990406 <--		
	US 2000-748344	A2	20001222 <--		

AB Gas-impermeable solid-state materials are fabricated into membranes for use in catalytic membrane reactors. The solid-state oxygen ion and electron-conducting membranes, e.g., GaFeLa0.3Sr1.705.15, are used in catalytic membrane reactors for promoting partial or full oxidation of chemical species (e.g., CH4), for decomposition of O-containing species (e.g., NOx, SOx), and for separation of O2 from other gases. The solid-state materials include mixed metal oxide compds. with brownmillerite crystal structure (A2B2O5).

IC ICM B01J0008-04
ICS B01J0020-28; B01J0023-54

INCL 422190000

CC 47-3 (Apparatus and Plant Equipment)
Section cross-reference(s): 49, 51, 57, 59, 67

IT 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-96-5, Manganese, uses 7440-02-0, Nickel, uses 7440-04-2, Osmium, uses **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses 7440-16-6, Rhodium, uses **7440-22-4**, Silver, uses 7440-48-4, Cobalt, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(conductive ceramic membranes for catalytic oxidation reactors)

IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses **7440-22-4**, Silver, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(conductive ceramic membranes for catalytic oxidation reactors)

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Agaskar	1995			US 5430209	HCAPLUS
Anon	1988			GB 2203446	HCAPLUS
Anon	1990			EP 399833	HCAPLUS
Anon	1994			WO 9424065	HCAPLUS

Anon	1995			EP 673675	HCAPLUS
Anon	1996			EP 705790	HCAPLUS
Anon	1997			EP 438902	HCAPLUS
Anon	1997			EP 766330	HCAPLUS
Balachandran	1994			US 5356728	HCAPLUS
Balachandran	1997			US 5639437	HCAPLUS
Burggraaf	1992			US 5160618	HCAPLUS
Chick	1990	10	6	Mater Lett	
Coatney	1973			US 3754951	HCAPLUS
Cook	1990	137	3309	J Electrochem Soc	HCAPLUS
Cook, R	1990	137	3309	J Electrochem Soc	HCAPLUS
Cook, R	1991	45	311	Solid State Ionics	HCAPLUS
Cook, R	1991	45	311	Solid State Ionics	HCAPLUS
Crespin, M	1981	69	359	J Catal	HCAPLUS
Dosch	1971			US 3607863	HCAPLUS
Edlund	1995			US 5393325	HCAPLUS
Gallagher	1964	41	2429	J Chem Phys	HCAPLUS
Goodenough	1990	44	21	Solid State Ionics	HCAPLUS
Greaves	1975	B31	641	Acta Cryst	HCAPLUS
Hazbun	1988			US 4791079	HCAPLUS
Hazbun	1989			US 4827071	HCAPLUS
Kuchynka, D	1991	138	1284	J Electrochem Soc	HCAPLUS
Kwech	1978			US 4083730	
Matsumoto	1980	127	2360	J Electrochem Soc	HCAPLUS
Matturo	1993			US 5210059	HCAPLUS
Mazanec	1988			US 4793904	HCAPLUS
Mazanec	1989			US 4802958	HCAPLUS
Mazanec	1990			US 4933054	HCAPLUS
Mazanec	1992			US 5160713	HCAPLUS
Mazanec	1994			US 5306411	HCAPLUS
Mazanec	1997			US 5591315	HCAPLUS
Mazanec	1997			US 5648304	HCAPLUS
Mazanec	1997			US 5693212	HCAPLUS
Mazanec	1997			US 5702999	HCAPLUS
Mazanec	1998			US 5714091	HCAPLUS
Mazanec	1998			US 5723035	HCAPLUS
Mazanec	1998			US 5744015	
Mazanec	1998			US 5788748	HCAPLUS
Moser	1995			US 5466646	HCAPLUS
Pederson	1991	10	437	Mater Lett	
Post	1995			US 5397541	HCAPLUS
Pujare, N	1988	135	2544	J Electrochem Soc	HCAPLUS
Rostrup-Nielson, J	1993	144	38	J Catalysis	
Ruderman	1998			US 5779904	HCAPLUS
Sammells	1992	52	111	Solid State Ionics	HCAPLUS
Sammells, T	1991		46	"Rational Selection	
Sammels, A	1991			"Rational Selection	
Sammels, A	1992	52	111	Solid State Ionics	
Schwartz, M	1993	140	L62	J e Soc	HCAPLUS
Shin, S	1978	13	1017	Mat Res Bull	HCAPLUS
Teraoka	1985		1367	Chem Lett	HCAPLUS
Teraoka	1985		1743	Chem Lett	HCAPLUS
Teraoka	1988		503	Chem Lett	HCAPLUS
Teraoka	1988	23	51	Mat Res Bull	HCAPLUS
Teraoka, Y	1989	97	458	J Ceram Soc Jpn Inte	
Teraoka, Y	1989	97	523	J Ceram Soc Jpn Inte	
Thorogood	1993			US 5240480	HCAPLUS
van der Pauw	1958	13	1	Philips Res Rep	
Violante	1994			US 5366712	HCAPLUS
White	1998			US 5821185	HCAPLUS

Yoshisato	1982			US 4330633	HCAPLUS
Zhen, Y	1990	25	785	Mat Res Bull	HCAPLUS

L121 ANSWER 5 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1999:297346 HCAPLUS
DN 130:298447
TI Catalytic membrane reactor with two component three-dimensional catalysis
IN Schwartz, Michael; White, James H.; Sammells, Anthony F.
PA Eltron Research, Inc., USA
SO PCT Int. Appl., 54 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 8

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9921649	A1	19990506	WO 1998-US23051	19981029 <--
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6355093	B1	20020312	US 1997-960182	19971029 <--
	AU 9912068	A	19990517	AU 1999-12068	19981029 <--
	AU 737249	B2	20010816		
	EP 1027149	A1	20000816	EP 1998-955208	19981029 <--
	EP 1027149	B1	20040616		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2001520931	T	20011106	JP 2000-517796	19981029 <--
	AT 269156	T	20040715	AT 1998-955208	19981029 <--
PRAI	US 1997-960182	A1	19971029 <--		
	US 1993-163620	B2	19931208 <--		
	US 1996-639781	A2	19960429 <--		
	WO 1998-US23051	W	19981029 <--		

AB This invention relates to catalytic reactor membranes having a gas-impermeable membrane for transport of oxygen anions. The membrane has an oxidation surface and a reduction surface. The membrane is coated on its oxidation surface with an adherent catalyst layer and is optionally coated on its reduction surface with a catalyst that promotes reduction of an oxygen-containing species (e.g., O2, NO2, SO2, etc.) to generate oxygen anions on the membrane. The reactor has an oxidation zone and a reduction zone separated by the membrane. A component of an oxygen-containing gas in the reduction zone is reduced at the membrane and a reduced species in a reactant gas in the oxidation zone of the reactor is oxidized. The reactor optionally contains a three-dimensional catalyst in the oxidation zone. The adherent catalyst layer and the three-dimensional catalyst are selected to promote a desired oxidation reaction, particularly a partial oxidation of a hydrocarbon. Preferred membrane materials of this invention are mixed metal oxides which are derived from brownmillerite and can, themselves, have brownmillerite structure. In a preferred embodiment, the oxygen reduction catalyst is Pd (5 weight %) on La0.8Sr0.2CoO3-x. The adherent catalyst layer is Ni (20 weight %) on La0.8Sr0.2MnO3 and the three-dimensional catalyst is Ni (5 weight %) on alumina.
IC ICM B01J0019-24

ICS B01J0019-00; B01J0023-00; B01J0035-06; B01J0012-00; B01D0071-02; B01J0008-02; C01B0013-02; C01B0003-38
CC 47-1 (Apparatus and Plant Equipment)
Section cross-reference(s): 51, 67
IT 1344-28-1, Aluminum oxide (Al2O3), uses 7439-88-5, Iridium, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses **7440-06-4**, Platinum, uses 7440-16-6, Rhodium, uses **7440-22-4**, Silver, uses **7440-33-7**, Tungsten, uses 7440-47-3, Chromium, uses 7440-62-2, Vanadium, uses 39377-48-5, Cobalt lanthanum strontium oxide 199614-06-7, Gallium iron lanthanum strontium oxide (GaFeLa0.3Sr1.7O5.15) 199614-07-8, Gallium iron lanthanum strontium oxide (GaFeLa0.2Sr1.8O5.1) 199614-11-4, Gallium iron lanthanum strontium oxide (Ga0.4Fe1.6La0.4Sr1.6O5.2) 199614-12-5, Gallium iron lanthanum strontium oxide (Ga0.6Fe1.4La0.4Sr1.6O5.2) 199614-13-6, Gallium iron lanthanum strontium oxide (Ga0.8Fe1.2La0.4Sr1.6O5.2) 199614-16-9, Gallium iron lanthanum strontium oxide (Ga0.6Fe1.4La0.3Sr1.7O5.15) 223388-33-8, Aluminum iron lanthanum strontium oxide (Al0.6Fe1.4La0.4Sr1.6O5.2) 223388-34-9, Aluminum iron lanthanum strontium oxide (Al0.8Fe1.2La0.4Sr1.6O5.2) 223388-35-0, Aluminum iron lanthanum strontium oxide (Al0.6Fe1.4La0.3Sr1.7O5.15) 223388-36-1, Aluminum iron lanthanum strontium oxide (AlFeLa0.3Sr1.7O5.15) 223388-37-2, Aluminum iron lanthanum strontium oxide (Al0.4Fe1.6La0.4Sr1.6O5.2) 223388-39-4, Aluminum iron lanthanum strontium oxide (AlFeLa0.2Sr1.8O5.1) 223388-40-7, Iron lanthanum strontium oxide (Fe2La0.4Sr1.6O5.2) 223388-41-8, Barium cerium indium iron oxide (Ba2CeIn0.5Fe0.5O5.5) 223388-42-9 223388-43-0, Barium gadolinium indium iron oxide (Ba2GdIn0.5Fe0.5O5) 223388-44-1 223388-45-2 223388-46-3 223388-47-4, Barium indium iron praseodymium oxide (Ba2In0.5Fe0.5PrO5.5) 223388-48-5, Barium gadolinium indium iron oxide (Ba2GdIn0.2Fe0.8O5.5)
RL: **CAT (Catalyst use)**; USES (Uses)
(catalytic membrane reactor with two component three-dimensional catalysis)
IT **7440-06-4**, Platinum, uses **7440-22-4**, Silver, uses **7440-33-7**, Tungsten, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalytic membrane reactor with two component three-dimensional catalysis)
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

RN 7440-33-7 HCAPLUS
CN Tungsten (CA INDEX NAME)

W

RETABLE
Referenced Author |Year | VOL | PG | Referenced Work | Referenced

(RAU)	(RPY)	(RVL)	(RPG)	(RWK)	File
Arco Chemical Technolog	1989			EP 0345393 A	HCAPLUS
Asher, W	1996			US 5583240 A	HCAPLUS
Eltron Research, Inc	1997			WO 9741060 A	HCAPLUS
Schwartz, M	1997	42	596	Prep Pap - Am Chem S	HCAPLUS
The Standard Oil Compan	1995			EP 0673675 A	HCAPLUS
Uthamalingam, B	1997			US 5639437 A	HCAPLUS

L121 ANSWER 6 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1999:83028 HCAPLUS
DN 130:101180
TI XPS and SIMS studies of carbon deposits on Pt/Al2O3 and Pd/SiO2 catalysts applied in the synthesis of **hydrogen cyanide** and selective hydrogenation of acetylene
AU Albers, P.; Seibold, K.; Prescher, G.; Muller, H.
CS Degussa AG, ZFE-OT, Hanau, D-63403, Germany
SO Applied Catalysis, A: General (**1999**), 176(1), 135-146
CODEN: ACAGE4; ISSN: 0926-860X
PB Elsevier Science B.V.
DT Journal
LA English
AB The morphol., chemical composition and graphiticity of carbons deposited or generated on catalyst surfaces during operation under tech. conditions were analyzed and compared with respect to the catalytic activity. The growth of carbon filaments was observed on the surfaces of high-temperature Pt/Al2O3 catalysts used for the synthesis of **hydrogen cyanide** as well as, surprisingly, low-temperature Pd/SiO2 catalysts used in the vinyl chloride process if enhanced concns. of Fe were present. At low impurity levels the deposition of glossy pyrocarbon and microcryst. carbon was observed at T≈1200°C and polymeric and microcryst. carbon at T<200°C. Selected features of the C1s XPS signals turned out to be suitable to characterize the graphiticity of the products of coke formation at a high temperature SIMS fragment ion ratios were utilized as rough qual. probes for the microstructural properties of the coke in comparison with well-defined grades of carbon.
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 23, 45, 49, 73
ST XPS carbon deposition platinum alumina catalyst; SIMS carbon deposition palladium silica catalyst; **hydrogen cyanide** synthesis catalyst carbon deposition; hydrogenation acetylene catalyst carbon deposition
IT Catalysts
Coking
Hydrogenation catalysts
Microstructure
Secondary-ion mass spectra
X-ray photoelectron spectra
(XPS and SIMS studies of carbon deposits on Pt/Al2O3 and Pd/SiO2 catalysts applied in synthesis of **hydrogen cyanide** and selective hydrogenation of acetylene)
IT 1344-28-1, Alumina, uses **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses 7631-86-9, Silica, uses
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(XPS and SIMS studies of carbon deposits on Pt/Al2O3 and Pd/SiO2 catalysts applied in synthesis of **hydrogen cyanide** and selective hydrogenation of acetylene)
IT 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(XPS and SIMS studies of carbon deposits on Pt/Al2O3 and Pd/SiO2

catalysts applied in synthesis of **hydrogen cyanide** and selective hydrogenation of acetylene)

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation); PREP (Preparation)**
(XPS and SIMS studies of carbon deposits on Pt/Al2O3 and Pd/SiO2 catalysts applied in synthesis of **hydrogen cyanide** and selective hydrogenation of acetylene)

IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(XPS and SIMS studies of carbon deposits on Pt/Al2O3 and Pd/SiO2 catalysts applied in synthesis of **hydrogen cyanide** and selective hydrogenation of acetylene)

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation); PREP (Preparation)**
(XPS and SIMS studies of carbon deposits on Pt/Al2O3 and Pd/SiO2 catalysts applied in synthesis of **hydrogen cyanide** and selective hydrogenation of acetylene)

RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

N
||
CH

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Albers, P	1994	17	645	Chem Eng Technol	
Albers, P	1994	150	368	J Catal	HCAPLUS
Albers, P	1998	176	561	J Catal	HCAPLUS
Albers, P	1995	48	336	Kautschuk Gummi Kuns	HCAPLUS
Anon	1997	37	223	Catal Today	
Audier, M	1981	19	217	Carbon	HCAPLUS
Baker, R	1989	27	315	Carbon	HCAPLUS
Barth, G	1988	11	307	Surf Interface Anal	HCAPLUS
Beamson, G	1992		241	High Resolution XPS	
Beyne, A	1993	48	503	Chem Eng Sci	HCAPLUS
Bronger, W	1962	319	58	Z Anorg Allg Chem	HCAPLUS
Cheung, T	1982	53	6857	J Appl Phys	HCAPLUS
Cheung, T	1984	55	1388	J Appl Phys	HCAPLUS
Conroy, J	1957		395	Proceedings of the T	
Degussa				DE 1013636	HCAPLUS
Degussa				US 4471712	

Degussa				US 4961914	HCAPLUS
Deller, K	1990		301	Catalysis by Organic	HCAPLUS
Endter, F	1958	30	305	Chem Ing Tech	HCAPLUS
Evans, S	1977	353	103	Proc Roy Soc London	HCAPLUS
Figueiredo, J	1989	5	385	Catal Today	HCAPLUS
Froment, G	1991	68	53	Studies in Surface S	HCAPLUS
General Motors				US 4565684	HCAPLUS
General Motors				US 4749557	HCAPLUS
Gueret, C	1995	33	159	Carbon	HCAPLUS
Hernadi, K	1996	34	1249	Carbon	HCAPLUS
Holstein, L	1982	18	139	Chemistry and Physic	
Hyperion				US 149573	HCAPLUS
Hyperion				US 46663230	
Klemm, W	1958	45	490	Naturwissenschaften	HCAPLUS
Klenk, H	1987	A8	159	Ullmann's Encycloped	
Koberstein, E	1973	12	444	Ind Eng Chem Process	HCAPLUS
Kovacich, J	1984	55	2935	J Appl Phys	HCAPLUS
Krishnankutty, N	1997	37	295	Catal Today	HCAPLUS
Lamber, R	1988	197	402	Surf Sci	HCAPLUS
Lamber, R	1990	227	15	Surf Sci	HCAPLUS
Menon, P	1994	94	1021	Chem Rev	HCAPLUS
Menon, P	1990	59	207	J Mol Catal	HCAPLUS
Muller, H	1987	59	645	Chem Ing Tech	
Nemes, T	1998	102	6323	J Phys Chem B	HCAPLUS
Niemantsverdriet, J	1987		769	Catalysis	HCAPLUS
Niemantsverdriet, J	1986	65	1397	Fuel	
Papirer, E	1994	32	1341	Carbon	HCAPLUS
Radovic, L	1997	25	243	Chemistry and Physic	HCAPLUS
Rostrup-Nielsen, J	1977	48	155	J Catal	HCAPLUS
Rudorff, W	1963	75	130	Angew Chem	
Schlogl, R	1983	21	53	Carbon	
Seah, M	1990	1		Practical Surface An	
Seah, M	1979	1	2	Surf Interface Anal	HCAPLUS
Shirley, D	1972	5	4709	Phys Rev B	
Stachurski, J	1985	108	249	J Less-Common Met	HCAPLUS
Takahagi, T	1988	26	389	Carbon	HCAPLUS
Tapping, R	1983	28	87	Can J Spectrosc	HCAPLUS
Tibbets, G	1984	66	632	J Cryst Growth	
van Attekum, P	1979	43	1896	Phys Rev Lett	HCAPLUS
van Langeveld, A	1988	6	1134	J Vac Sci Technol A	
van Langeveld, A	1986	9	215	Surf Interface Anal	HCAPLUS
Vohler, O	1986	A5	145	Ullmann's Encycloped	
Wagner, C	1978			Handbook of X-ray Ph	
Wagner, C	1990	1	597	Practical Surface An	
Yasaki Corp				EP 325236	HCAPLUS

L121 ANSWER 7 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1998:115377 HCAPLUS
DN 128:129489
TI Process and perovskitic membranes for the partial oxidation of C1-4 hydrocarbons into synthesis gas
IN Mazanec, Terry J.; Cable, Thomas L.
PA Standard Oil Co., USA
SO U.S., 9 pp., Cont.-in-part of U.S. Ser. No. 311,295, abandoned.
CODEN: USXXAM
DT **Patent**
LA English
FAN.CNT 8

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI	US 5714091	A	19980203	US 1995-473471	19950607 <--
	US 4933054	A	19900612	US 1987-25511	19870313 <--
	ZA 9003994	A	19920129	ZA 1990-3994	19900523 <--
	US 5306411	A	19940426	US 1990-618792	19901127 <--
	ZA 9010408	A	19911030	ZA 1990-10408	19901227 <--
	US 5591315	A	19970107	US 1995-394925	19950224 <--
	US 5702999	A	19971230	US 1996-763235	19961210 <--
	CN 1214276	A	19990421	CN 1997-121101	19971015 <--
	CN 1221812	A	19990707	CN 1998-123788	19981031 <--
	CN 1052268	B	20000510		
	US 6287432	B1	20010911	US 1999-333168	19990614 <--
PRAI	US 1987-25511	A2	19870313 <--		
	US 1989-357317	B2	19890525 <--		
	US 1989-457327	B2	19891227 <--		
	US 1989-457340	B2	19891227 <--		
	US 1989-457384	B2	19891227 <--		
	US 1990-510296	B2	19900416 <--		
	US 1990-618792	A3	19901127 <--		
	US 1994-228793	B1	19940415 <--		
	US 1994-311295	B2	19940923 <--		
	US 1995-394925	A2	19950224 <--		
	US 1995-487945	A1	19950607 <--		
	US 1995-575412	A1	19951220 <--		
	US 1996-615580	A3	19960313 <--		

AB A process for the partial oxidation of C1-4 hydrocarbons into synthesis gas comprises passing the hydrocarbon stream through a membrane formed from perovskitic or multi-phase structures with a chemical active coating (e.g., metals and/or metal oxides) which demonstrate an exceptionally high rate of fluid flux. The membranes are conductors of oxygen ions and electrons and are stable in air over the temperature range of 25° to the operating temperature of the membrane.

IC ICM C07C0001-02
ICS C07C0027-00; B01J0020-28; B01J0021-00

INCL 252373000

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 48, 67

IT 7429-91-6, Dysprosium, uses 7439-89-6, Iron, uses 7439-91-0, Lanthanum, uses 7439-92-1, Lead, uses 7439-94-3, Lutetium, uses **7439-95-4**, Magnesium, uses 7439-96-5, Manganese, uses 7440-00-8, Neodymium, uses 7440-02-0, Nickel, uses **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses 7440-09-7, Potassium, uses 7440-10-0, Praseodymium, uses 7440-12-2, Promethium, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-19-9, Samarium, uses **7440-22-4**, Silver, uses 7440-24-6, Strontium, uses 7440-25-7, Tantalum, uses 7440-27-9, Terbium, uses 7440-29-1, Thorium, uses 7440-30-4, Thulium, uses 7440-32-6, Titanium, uses 7440-36-0, Antimony, uses 7440-39-3, Barium, uses 7440-45-1, Cerium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses **7440-50-8**, Copper, uses 7440-52-0, Erbium, uses 7440-53-1, Europium, uses 7440-54-2, Gadolinium, uses **7440-57-5**, Gold, uses 7440-60-0, Holmium, uses 7440-61-1, Uranium, uses 7440-62-2, Vanadium, uses 7440-64-4, Ytterbium, uses 7440-65-5, Yttrium, uses 7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 13494-80-9, Tellurium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(process and perovskitic membranes for the partial oxidation of C1-4 hydrocarbons into synthesis gas)

IT **7439-95-4**, Magnesium, uses **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses **7440-22-4**, Silver, uses **7440-50-8**, Copper, uses **7440-57-5**, Gold, uses

RL: **CAT (Catalyst use)**; USES (Uses)
(process and perovskitic membranes for the partial oxidation of C1-4 hydrocarbons into synthesis gas)

RN 7439-95-4 HCAPLUS
CN Magnesium (CA INDEX NAME)

Mg

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

RN 7440-57-5 HCAPLUS
CN Gold (CA INDEX NAME)

Au

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Han	1992			US 5149516	HCAPLUS
Hazbun	1988			US 4791079	HCAPLUS

L121 ANSWER 8 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1997:740174 HCAPLUS
DN 128:36933
TI Oxygen anion- and electron-mediating brownmillerite-type, gas-impermeable solid-state membranes, catalytic reactors containing the membranes, process for oxidizing a reactant gas capable of reacting with oxygen, and process for separating oxygen from an oxygen-containing gas
IN Schwartz, Michael; White, James H.; Sammells, Anthony F.

PA Eltron Research, Inc., USA
SO PCT Int. Appl., 86 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 8

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9741060	A1	19971106	WO 1996-US14841	19960913 <--
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN				
	RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	US 6033632	A	20000307	US 1996-639781	19960429 <--
	AU 9669791	A	19971119	AU 1996-69791	19960913 <--
	AU 737377	B2	20010816		
	EP 896566	A1	19990217	EP 1996-930896	19960913 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
PRAI	US 1996-639781	A	19960429 <--		
	US 1993-163620	B2	19931208 <--		
	WO 1996-US14841	W	19960913 <--		

AB The membranes are manufactured from single-component materials exhibiting both electron and O-anion conductivity The electron- and O-anion-conducting materials are compds. having a brownmillerite structure and general formula A2B2O5 (A, B, most generally may be any metal). Specifically, the membrane materials are single-phase brownmillerite-type oxides having general formula A2-xA'xB2-yB'yO5+z (A is ≥1 alkaline earth metals; A' is ≥1 metals selected from lanthanides and Y; B is ≥1 metals selected from of 3rd transition metals, and group 13 metals; B' is ≥1 metals selected from 3d transition metals, group 13 metals, lanthanides, and Y; independently, x, y >0 but <2; z = number that gives a neutral compound). The membranes are used for O(g) separation and for promoting oxidation-reduction reactions. The catalytic reactors, for reacting an O-containing gas with a reactant gas, comprise a membrane as above, ≥1 reactor cells containing a reduction zone separated by the membrane from an oxidation zone, a 1st entrance port for introducing the O-containing gas into the reduction zone, a 2nd entrance port for introducing the reactant gas into the oxidation zone, an exit port for gases exiting the reactor, and a passage between the entrance ports and exit port for movement of ≥1 gasses through the reactor. The process for oxidizing a reactant gas capable of reacting with O comprises heating the reactor cell at 300-1200°, passing the O-containing gas through the reduction zone in contact with the reduction surface of the membrane, and providing the reactant gas in contact with the oxidation surface of the membrane in the oxidation zone. The process for separating O from an O-containing gas comprises heating the reactor cell at 300-1200°, passing the O-containing gas through the reduction zone in contact with the reduction surface of the membrane, and collecting the separated O from the oxidation zone.

IC ICM C01B0013-00
ICS B01J0008-04; B01J0035-04
CC 49-3 (Industrial Inorganic Chemicals)
IT 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-96-5, Manganese, uses 7440-02-0, Nickel, uses 7440-04-2, Osmium, uses **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses 7440-16-6, Rhodium, uses 7440-48-4, Cobalt, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(oxidation catalyst, coating; on brownmillerite-type membranes for oxidizing reactant gas capable of reacting with oxygen and for separating oxygen from oxygen-containing gas)
IT **7440-22-4**, Silver, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(reduction catalyst, coating; on brownmillerite-type membranes for oxidizing reactant gas capable of reacting with oxygen and for separating oxygen from oxygen-containing gas)
IT **7440-50-8**, Copper, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(reduction catalysts containing; on brownmillerite-type membranes for oxidizing reactant gas capable of reacting with oxygen and for separating oxygen from oxygen-containing gas)
IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(oxidation catalyst, coating; on brownmillerite-type membranes for oxidizing reactant gas capable of reacting with oxygen and for separating oxygen from oxygen-containing gas)
RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **7440-22-4**, Silver, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(reduction catalyst, coating; on brownmillerite-type membranes for oxidizing reactant gas capable of reacting with oxygen and for separating oxygen from oxygen-containing gas)
RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

IT **7440-50-8**, Copper, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(reduction catalysts containing; on brownmillerite-type membranes for oxidizing reactant gas capable of reacting with oxygen and for separating oxygen from oxygen-containing gas)
RN 7440-50-8 HCAPLUS

CN Copper (CA INDEX NAME)

Cu

L121 ANSWER 9 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1997:140224 HCAPLUS
DN 126:145592
TI Particulate catalysts for use in a fluidized bed
IN Sasaki, Yutaka; Yamamoto, Hiroshi; Moriya, Kiyoshi; Nakamura, Yoshimi
PA Nitto Kagaku Kogyo Kabushiki Kaisha, Japan
SO Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 750942	A2	19970102	EP 1996-110293	19960626 <--
	EP 750942	A3	19970827		
	EP 750942	B1	20011212		
	R: DE, ES, GB, IT				
	JP 09070542	A	19970318	JP 1996-142887	19960605 <--
	JP 3982852	B2	20070926		
	ES 2168409	T3	20020616	ES 1996-110293	19960626 <--
	NL 1003456	A1	19961231	NL 1996-1003456	19960628 <--
	NL 1003456	C2	19971007		
	US 5877381	A	19990302	US 1996-673053	19960701 <--
PRAI	JP 1995-165576	A	19950630 <--		
	JP 1996-142887	A	19960605 <--		

AB The present invention provides a fluidized bed catalyst for the synthetic reaction of organic compds. which has a reduced catalyst loss. A fluidized bed catalyst for organic compound synthetic reaction, characterized in that ≥90% of the catalyst particles is in the range of 5-500 μ on the weight-based particle size distribution and ≥90% of the 20 -75 μ particles have a crushing strength which satisfies the following equation: CS > A·dα wherein CS represents a crushing strength [g-weight/particle], A represents a constant 0.001, d represents a particle diameter [μ], and α represents a constant 2. The catalyst is useful oxidation or ammoxidn. reactions of olefins, aldehydes, and aromatic hydrocarbons.

IC ICM B01J0035-02
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 25, 67
IT **7429-90-5**, Aluminum, uses 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-91-0, Lanthanum, uses 7439-92-1, Lead, uses 7439-93-2, Lithium, uses **7439-95-4**, Magnesium, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-04-2, Osmium, uses **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses 7440-09-7, Potassium, uses 7440-15-5, Rhenium, uses 7440-16-6, Rhodium, uses 7440-17-7, Rubidium, uses 7440-18-8, Ruthenium, uses **7440-22-4**, Silver, uses 7440-23-5, Sodium, uses 7440-24-6, Strontium, uses 7440-25-7, Tantalum, uses 7440-28-0, Thallium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses **7440-33-7**, Tungsten, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic, uses 7440-39-3, Barium, uses 7440-42-8, Boron, uses 7440-43-9, Cadmium, uses 7440-45-1, Cerium, uses 7440-46-2, Cesium, uses 7440-47-3, Chromium, uses

7440-48-4, Cobalt, uses **7440-50-8**, Copper, uses 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses 7440-61-1, Uranium, uses 7440-62-2, Vanadium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 7440-74-6, Indium, uses 7704-34-9, Sulfur, uses 7723-14-0, Phosphorus, uses 7782-44-7, Oxygen, uses 7782-49-2, Selenium, uses 13494-80-9, Tellurium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(composite catalysts containing; particulate catalysts for use in a fluidized bed oxidation reactions)

IT **74-90-8P, Hydrogen cyanide**, preparation
100-47-0P, Benzonitrile, preparation 107-13-1P, 2-Propenenitrile, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(particulate catalysts for use in a fluidized bed oxidation reactions)

IT **7429-90-5**, Aluminum, uses **7439-95-4**, Magnesium, uses **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses **7440-22-4**, Silver, uses **7440-33-7**, Tungsten, uses **7440-50-8**, Copper, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(composite catalysts containing; particulate catalysts for use in a fluidized bed oxidation reactions)

RN 7429-90-5 HCAPLUS
CN Aluminum (CA INDEX NAME)

Al

RN 7439-95-4 HCAPLUS
CN Magnesium (CA INDEX NAME)

Mg

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

RN 7440-33-7 HCAPLUS
CN Tungsten (CA INDEX NAME)

W

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture); PREP (Preparation)**
(particulate catalysts for use in a fluidized bed oxidation reactions)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

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L121 ANSWER 10 OF 19 HCAPLUS · COPYRIGHT 2008 ACS on STN
AN 1997:129483 HCAPLUS
DN 126:161374
TI Improved safety through distributed manufacturing of hazardous chemicals
AU Koch, T. A.; Krause, K. R.; Mehdizadeh, M.
CS E. I. DuPont de Nemours, Inc., Wilmington, DE, 19880, USA
SO Process Safety Progress (**1997**), 16(1), 23-24
CODEN: PSAPE2; ISSN: 1066-8527
PB American Institute of Chemical Engineers
DT Journal
LA English
AB Large-scale, centralized manufacture of chems. coupled with distribution to remote customers has obvious economic advantages derived from economy of scale. However, in some cases, concern for safety and environment can drive a search for competitive small scale processes for production of toxic chems. at the end-use site, thereby eliminating the potential hazards associated with transportation. A case study is presented in which novel technol. was explored to develop a safe, economically attractive process with minimal waste in synthesis of HCN.
CC 59-5 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 49
ST safety improvement distributed manuf **hydrogen cyanide**; catalyzed microwave synthesis **hydrogen cyanide** safety
IT Chemistry
(hazardous chems.; improved safety through small-scale, distributed manufacturing of **hydrogen cyanide** via catalyzed microwave synthesis)
IT Hazardous materials
Microwave
Safety
(improved safety through small-scale, distributed manufacturing of **hydrogen cyanide** via catalyzed microwave synthesis)
IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses
7440-16-6, Rhodium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(alumina-supported; improved safety through small-scale, distributed

manufacturing of **hydrogen cyanide** via catalyzed microwave synthesis)

IT 409-21-2, Silicon carbide, uses 7440-44-0, Carbon, uses
RL: CAT (Catalyst use); USES (Uses)
(improved safety through small-scale, distributed manufacturing of **hydrogen cyanide** via catalyzed microwave synthesis)

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture); PREP (Preparation)**
(improved safety through small-scale, distributed manufacturing of **hydrogen cyanide** via catalyzed microwave synthesis)

IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(alumina-supported; improved safety through small-scale, distributed manufacturing of **hydrogen cyanide** via catalyzed microwave synthesis)

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture); PREP (Preparation)**
(improved safety through small-scale, distributed manufacturing of **hydrogen cyanide** via catalyzed microwave synthesis)

RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

CH

L121 ANSWER 11 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1995:503187 HCAPLUS
DN 122:243441
TI **Hydrogen cyanide** manufacture from ammonia and carbon under microwave radiation
IN Wan, Jeffrey K. S.; Koch, Theodore A.
PA du Pont de Nemours, E. I., and Co., USA
SO U.S., 2 pp.
CODEN: USXXAM
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 5393393	A	19950228	US 1993-10569	19930128 <--
PRAI US 1993-10569		19930128 <--		

AB HCN is produced by reacting NH3 or urea and elemental C or a hydrocarbon

under microwave radiation. The C may contain a metal catalyst selected from Rh, Pt, Ni, Co, Pb, Ag, Cu-Rh, and W.

IC ICM C01B0021-00
INCL 204157430
CC 49-2 (Industrial Inorganic Chemicals)
ST carbon ammonia microwave **hydrogen cyanide**; metal catalyst carbon ammonia microwave
IT Microwave
(pulsed, **hydrogen cyanide** manufacture from ammonia or urea and carbon under microwave radiation)
IT 7440-44-0, Carbon, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(catalytic metal-containing; **hydrogen cyanide** manufacture from ammonia or urea and carbon under microwave radiation)
IT 75-05-8P, Acetonitrile, preparation
RL: **BYP (Byproduct)**; **PREP (Preparation)**
(**hydrogen cyanide** manufacture from ammonia or urea and carbon under microwave radiation)
IT 7439-92-1, Lead, uses 7440-02-0, Nickel, uses **7440-06-4**, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses **7440-22-4**, Silver, uses **7440-33-7**, Tungsten, uses 7440-48-4, Cobalt, uses **7440-50-8**, Copper, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(**hydrogen cyanide** manufacture from ammonia or urea and carbon under microwave radiation)
IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **PEP (Physical, engineering or chemical process)**; **PNU (Preparation, unclassified)**; **PREP (Preparation)**; **PROC (Process)**
(**hydrogen cyanide** manufacture from ammonia or urea and carbon under microwave radiation)
IT 7664-41-7, Ammonia, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**hydrogen cyanide** manufacture from ammonia or urea and carbon under microwave radiation)
IT **7440-06-4**, Platinum, uses **7440-22-4**, Silver, uses **7440-33-7**, Tungsten, uses **7440-50-8**, Copper, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(**hydrogen cyanide** manufacture from ammonia or urea and carbon under microwave radiation)
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

RN 7440-33-7 HCAPLUS
CN Tungsten (CA INDEX NAME)

W

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process)**
(**hydrogen cyanide** manufacture from ammonia or urea and carbon under microwave radiation)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

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L121 ANSWER 12 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1994:63471 HCAPLUS
DN 120:63471
TI Foraminous sheets for use in catalysis
IN Heywood, Alan Edward; Scorgie, Alan; Cranston, Joseph James
PA PGP Industries, Inc., USA
SO PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9324229	A1	19931209	WO 1993-GB1147	19930528 <--
	W: AT, AU, BB, BG, BR, BY, CA, CH, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, UA, US, VN				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9343381	A	19931230	AU 1993-43381	19930528 <--
	EP 649343	A1	19950426	EP 1993-913253	19930528 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
	JP 07507232	T	19950810	JP 1993-500347	19930528 <--
	ZA 9303820	A	19940603	ZA 1993-3820	19930601 <--
	FI 9405660	A	19950111	FI 1994-5660	19941201 <--
	NO 9404633	A	19950130	NO 1994-4633	19941201 <--
PRAI	GB 1992-11534	A	19920601 <--		
	WO 1993-GB1147	A	19930528 <--		

AB To improve their flexibility and/or their performance, relief patterns are applied to foraminous sheets for use in catalysis, such as catalyst sheets, getter sheets and support sheets. The specification discloses various relief patterns and methods for producing the relief patterns.
IC ICM B01J0035-04
ICS B01J0019-32; B01D0053-18; C01B0021-28
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 47

IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, foraminous sheets for)
IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, foraminous sheets for)
RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

L121 ANSWER 13 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1993:62568 HCAPLUS
DN 118:62568
TI High-surface area, low-pressure drop foraminate metal catalysts for ammonia oxidation
IN Hochella, William A.; Heffernen, Steven A.
PA Johnson Matthey, Inc., USA
SO U.S., 9 pp.
CODEN: USXXAM
DT **Patent**
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5160722	A	19921103	US 1991-716539	19910617 <--
	ZA 9204191	A	19930331	ZA 1992-4191	19920609 <--
	WO 9222499	A1	19921223	WO 1992-US4690	19920610 <--
	W: AU, CA, FI, JP, NO				
	AU 9221795	A	19930112	AU 1992-21795	19920610 <--
	JP 06510472	T	19941124	JP 1992-500924	19920610 <--
	EP 519699	A1	19921223	EP 1992-305544	19920617 <--
	EP 519699	B1	19950125		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, PT, SE				
	ES 2067297	T3	19950316	ES 1992-305544	19920617 <--
	US 5278124	A	19940111	US 1992-917385	19920723 <--
PRAI	US 1991-716539	A	19910617 <--		
	US 1991-716540	A	19910617 <--		
	WO 1992-US4690	A	19920610 <--		

AB The catalysts, manufactured from Pt, Rh, Pd, and their alloys, have a configuration whereby the initial product of the formula: curved/flat (C/F) ratio multiplied by the mesh count (N) per in. and wire diameter (d, in in.) for the elements is .gtorsim.0.08, but .ltorsim.10, and, for a given NH3 throughput, the conversion efficiency is a function of the C/F ratio, d, and N, and the conversion efficiency is improved by increasing N at a given d, increasing d at a given N, and increasing C/F to ≥1.0. In the manufacture of HNO3 at 100 ton/day, optimum efficiency was obtained at residence time 6.0 + 10-4 s, instead of 4 + 10-4 s, by increasing C/F from 1 to 1.5, resulting in an increase in NH3 conversion from 96 to 99%.

IC ICM C01B0021-26
INCL 423403000
CC 49-2 (Industrial Inorganic Chemicals)
IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses
7440-16-6, Rhodium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, for nitric acid manufacture by ammonia oxidation)
IT **7440-05-3**, Palladium, uses **7440-06-4**, Platinum, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, for nitric acid manufacture by ammonia oxidation)
RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

L121 ANSWER 14 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1992:493041 HCAPLUS
DN 117:93041
TI Selective **hydrogen cyanide** synthesis from CFC12 (CCl2F2) and ammonia over metal catalysts supported on lanthanum trifluoride and activated charcoal
AU Takita, Yusaku; Imamura, Takeshi; Mizuhara, Yukako; Abe, Yumi; Ishihara, Tatsumi
CS Fac. Eng., Oita Univ., Oita, 870-11, Japan
SO Applied Catalysis, B: Environmental (**1992**), 1(2), 79-87
CODEN: ACBEE3; ISSN: 0926-3373
DT Journal
LA English
AB The applicability of supports such as TiO2, LaF3, activated charcoal (AC), and Cr2O3 to the new reaction CCl2F2 + 5/3NH3 → HCN + 2HCl + 2HF + 1/3N2 was examined, and it was found that TiO2 itself reacted with CFC12 to give CO and CO2 even at 673 K in addition to HCN formation. LaF3 did not react with CFC (chlorofluorocarbon) even at 823 K so that it could be considered suitable for use as a catalyst support. Au (1 weight%)/LaF3 and Pt (1 weight%)/LaF3 were effective for HCN formation, and HCN selectivity reached 77-78% at 823 K. Activated charcoal was also suitable for use as a catalyst support, and HCN was formed selectively (72-84%) over Rh (1 weight%)/AC and Pd (1 weight%)/AlF3/AC catalysts at 823 K.
CC 49-2 (Industrial Inorganic Chemicals)
ST **hydrogen cyanide** selective synthesis metal catalyst; chlorofluorocarbon ammonia reaction **hydrogen cyanide** synthesis; catalyst support **hydrogen cyanide** synthesis; lanthanum trifluoride catalyst support **hydrogen cyanide**; activated charcoal catalyst support **hydrogen cyanide**; gold catalyst lanthanum trifluoride support; platinum catalyst lanthanum trifluoride support; palladium catalyst activated charcoal support; rhodium catalyst activated charcoal support
IT Catalysts and Catalysis
(metal, activated charcoal-supported or lanthanum fluoride-supported, for **hydrogen cyanide** from chlorofluoromethane and

ammonia)
IT Charcoal
RL: CAT (Catalyst use); USES (Uses)
(activated, catalyst support, for **hydrogen cyanide** from chlorofluoromethane and ammonia)
IT 13709-38-1, Lanthanum trifluoride
RL: CAT (Catalyst use); USES (Uses)
(catalyst support, for **hydrogen cyanide** from chlorofluoromethane and ammonia)
IT 7440-02-0, Nickel, uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst, activated charcoal-supported or lanthanum fluoride-supported, for **hydrogen cyanide** from chlorofluoromethane and ammonia)
IT **7440-05-3**, Palladium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, activated charcoal-supported, for **hydrogen cyanide** from chlorofluoromethane and ammonia)
IT **7440-06-4**, Platinum, uses 7440-16-6, Rhodium, uses
7440-57-5, Gold, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, lanthanum fluoride-supported, for **hydrogen cyanide** from chlorofluoromethane and ammonia)
IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(selective preparation of, from chlorofluoromethane and ammonia, over metal catalysts supported on lanthanum fluoride and activated charcoal)
IT **7440-05-3**, Palladium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, activated charcoal-supported, for **hydrogen cyanide** from chlorofluoromethane and ammonia)
RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

IT **7440-06-4**, Platinum, uses **7440-57-5**, Gold, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, lanthanum fluoride-supported, for **hydrogen cyanide** from chlorofluoromethane and ammonia)
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-57-5 HCAPLUS
CN Gold (CA INDEX NAME)

Au

IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(selective preparation of, from chlorofluoromethane and ammonia, over metal catalysts supported on lanthanum fluoride and activated charcoal)

RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

L121 ANSWER 15 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1989:536947 HCAPLUS
DN 111:136947
TI Manufacture of **hydrocyanic acid**
IN Sasaki, Yutaka; Utsumi, Hiroshi; Noda, Mikio
PA Nitto Chemical Industry Co., Ltd., Japan
SO Eur. Pat. Appl., 12 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 322796	A1	19890705	EP 1988-121594	19881223 <--
	EP 322796	B1	19920930		
	R: DE, GB, NL				
	JP 01261223	A	19891018	JP 1988-323459	19881223 <--
	JP 07023213	B	19950315		
PRAI	JP 1987-326856	A	19871225 <--		

AB HCN is prepared by reaction of HCO2CH3, NH3, and O in the presence of a metal oxide catalyst in gas phase at a high temperature The oxide catalyst contains Sb and/or Mo in addition to other metals. Thus, a typical catalyst has a composition Sb10Fe7Mg1Mo0.5Te1K0.1O25.05.
IC ICM **C01C0003-02**
CC 49-2 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67
ST **hydrocyanic acid** manuf catalyst; metal oxide catalyst
hydrocyanic acid; antimony oxide catalyst
hydrocyanic acid; molybdenum oxide catalyst
hydrocyanic acid
IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, by reaction of Me formate and ammonia and oxygen, metal oxide catalysts for)
IT **7429-90-5**, Aluminum, uses and miscellaneous 7439-88-5, Iridium, uses and miscellaneous 7439-89-6, Iron, uses and miscellaneous 7439-92-1, Lead, uses and miscellaneous 7439-93-2, Lithium, uses and miscellaneous **7439-95-4**, Magnesium, uses and miscellaneous 7439-96-5, Manganese, uses and miscellaneous 7439-98-7, Molybdenum, uses and miscellaneous 7440-02-0, Nickel, uses and miscellaneous 7440-03-1, Niobium, uses and miscellaneous 7440-04-2, Osmium, uses and miscellaneous **7440-05-3**, Palladium, uses and miscellaneous **7440-06-4**, Platinum, uses and miscellaneous 7440-09-7, Potassium, uses and miscellaneous 7440-15-5, Rhenium, uses and miscellaneous 7440-16-6, Rhodium, uses and miscellaneous 7440-17-7, Rubidium, uses and miscellaneous 7440-18-8, Ruthenium, uses and miscellaneous 7440-20-2, Scandium, uses and miscellaneous 7440-21-3, Silicon, uses and miscellaneous **7440-22-4**, Silver, uses and miscellaneous 7440-23-5, Sodium, uses and miscellaneous 7440-24-6, Strontium, uses and miscellaneous 7440-25-7, Tantalum, uses and

miscellaneous 7440-29-1, Thorium, uses and miscellaneous 7440-31-5, Tin, uses and miscellaneous 7440-32-6, Titanium, uses and miscellaneous **7440-33-7**, Tungsten, uses and miscellaneous 7440-36-0, Antimony, uses and miscellaneous 7440-38-2, Arsenic, uses and miscellaneous 7440-39-3, Barium, uses and miscellaneous 7440-41-7, Beryllium, uses and miscellaneous 7440-42-8, Boron, uses and miscellaneous 7440-43-9, Cadmium, uses and miscellaneous 7440-46-2, Cesium, uses and miscellaneous 7440-47-3, Chromium, uses and miscellaneous 7440-48-4, Cobalt, uses and miscellaneous **7440-50-8**, Copper, uses and miscellaneous 7440-55-3, Gallium, uses and miscellaneous 7440-56-4, Germanium, uses and miscellaneous **7440-57-5**, Gold, uses and miscellaneous 7440-62-2, Vanadium, uses and miscellaneous 7440-65-5, Yttrium, uses and miscellaneous 7440-66-6, Zinc, uses and miscellaneous 7440-67-7, Zirconium, uses and miscellaneous 7440-69-9, Bismuth, uses and miscellaneous 7440-70-2, Calcium, uses and miscellaneous 7440-74-6, Indium, uses and miscellaneous 7704-34-9, Sulfur, uses and miscellaneous 7723-14-0, Phosphorus, uses and miscellaneous 13494-80-9, Tellurium, uses and miscellaneous 74402-80-5
RL: **CAT (Catalyst use)**; USES (Uses)
(metal oxide catalyst containing, for manufacture of **hydrocyanic acid**)

IT 16833-27-5, Oxide
RL: USES (Uses)
(metal, catalyst, for manufacture of **hydrocyanic acid**)

IT 7782-44-7, Oxygen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with Me formate and ammonia, **hydrocyanic acid** manufacture by)

IT 7664-41-7, Ammonia, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with Me formate and oxygen, **hydrocyanic acid** manufacture by)

IT 67-56-1, Methanol, reactions 75-65-0, tert-Butanol, reactions 115-07-1, Propylene, reactions 115-11-7, Isobutene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with ammonia and oxygen and Me formate, in presence of metal oxide catalysts, for preparation of **hydrocyanic acid**)

IT 107-31-3, Methyl formate
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with ammonia and oxygen, in presence of metal oxide catalysts, **hydrocyanic acid** manufacture by)

IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, by reaction of Me formate and ammonia and oxygen, metal oxide catalysts for)

RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

IT **7429-90-5**, Aluminum, uses and miscellaneous **7439-95-4**, Magnesium, uses and miscellaneous **7440-05-3**, Palladium, uses and miscellaneous **7440-06-4**, Platinum, uses and miscellaneous **7440-22-4**, Silver, uses and miscellaneous **7440-33-7**, Tungsten, uses and miscellaneous **7440-50-8**, Copper, uses and

miscellaneous **7440-57-5**, Gold, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(metal oxide catalyst containing, for manufacture of **hydrocyanic acid**)

RN 7429-90-5 HCAPLUS
CN Aluminum (CA INDEX NAME)

Al

RN 7439-95-4 HCAPLUS
CN Magnesium (CA INDEX NAME)

Mg

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

RN 7440-33-7 HCAPLUS
CN Tungsten (CA INDEX NAME)

W

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

RN 7440-57-5 HCAPLUS
CN Gold (CA INDEX NAME)

Au

L121 ANSWER 16 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1989:445979 HCAPLUS
DN 111:45979
TI Phosphorus-antimony-containing catalyst for oxidation
IN Sasaki, Yutaka; Utsumi, Hiroshi; Otani, Masato; Yamamoto, Shinji
PA Nitto Chemical Industry Co., Ltd., Japan
SO Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 319192	A2	19890607	EP 1988-311064	19881123 <--
	EP 319192	A3	19890614		
	EP 319192	B1	19920122		
	R: DE, ES, FR, GB, IT, NL				
	JP 01143643	A	19890606	JP 1987-300995	19871127 <--
	JP 07012434	B	19950215		
	ES 2032571	T3	19930216	ES 1988-311064	19881123 <--
	US 4946819	A	19900807	US 1988-276586	19881128 <--
PRAI	JP 1987-300995	A	19871127 <--		

OS CASREACT 111:45979
AB A P-Sb-containing catalyst for oxidation is obtained by calcining a metal oxide composition containing as essential components Sb, SiO2, and ≥1 element selected from Fe, Co, Ni, Sn, U, Cr, Cu, Mn, Ti, Th, and Ce at 500° - 950° to prepare a base catalyst, impregnating the base catalyst with a solution containing a P compound so that the atomic ratio of impregnated P to Sb in the base catalyst is .apprx. 0.01:1 to 2:1, drying the impregnated base catalyst, and calcining the dried product at 300°-850°. The catalyst exhibits satisfactory activity and strength, and can be prepared with satisfactory reproducibility. The catalyst is useful for propylane ammoxidn. to acrylonitrile, MeOH ammoxidn. to HCN, and ethylbenzene oxidative dehydrogenation to styrene.
IC ICM B01J0027-18
ICS B01J0027-185; B01J0027-188; **C01C0003-02**; C07C0120-14; B01J0023-18
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 45
ST antimony phosphorus oxidn catalyst; ammoxidn catalyst antimony phosphorus; oxidative dehydrogenation catalyst antimony phosphorus; propylene ammoxidn catalyst; methanol ammoxidn catalyst; ethylbenzene oxidative dehydrogenation catalyst; acrylonitrile manuf ammoxidn catalyst; **hydrogen cyanide** manuf ammoxidn catalyst; styrene manuf oxidative dehydrogenation catalyst
IT 67-56-1, Methanol, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(ammoxidn. of, to **hydrogen cyanide**, antimony-phosphorus-containing catalyst for)
IT **7429-90-5**, Aluminum, uses and miscellaneous 7439-88-5, Iridium, uses and miscellaneous 7439-89-6, Iron, uses and miscellaneous 7439-91-0, Lanthanum, uses and miscellaneous 7439-92-1, Lead, uses and miscellaneous 7439-93-2, Lithium, uses and miscellaneous **7439-95-4**, Magnesium, uses and miscellaneous 7439-96-5, Manganese, uses and miscellaneous 7439-98-7, Molybdenum, uses and miscellaneous 7440-02-0, Nickel, uses and miscellaneous 7440-03-1, Niobium, uses and miscellaneous 7440-04-2, Osmium, uses and miscellaneous **7440-05-3**, Palladium, uses and miscellaneous

7440-06-4, Platinum, uses and miscellaneous 7440-09-7, Potassium, uses and miscellaneous 7440-15-5, Rhenium, uses and miscellaneous 7440-16-6, Rhodium, uses and miscellaneous 7440-17-7, Rubidium, uses and miscellaneous 7440-18-8, Ruthenium, uses and miscellaneous **7440-22-4**, Silver, uses and miscellaneous 7440-23-5, Sodium, uses and miscellaneous 7440-24-6, Strontium, uses and miscellaneous 7440-25-7, Tantalum, uses and miscellaneous 7440-28-0, Thallium, uses and miscellaneous 7440-29-1, Thorium, uses and miscellaneous 7440-31-5, Tin, uses and miscellaneous 7440-32-6, Titanium, uses and miscellaneous **7440-33-7**, Tungsten, uses and miscellaneous 7440-36-0, Antimony, uses and miscellaneous 7440-38-2, Arsenic, uses and miscellaneous 7440-39-3, Barium, uses and miscellaneous 7440-41-7, Beryllium, uses and miscellaneous 7440-42-8, Boron, uses and miscellaneous 7440-43-9, Cadmium, uses and miscellaneous 7440-45-1, Cerium, uses and miscellaneous 7440-46-2, Cesium, uses and miscellaneous 7440-47-3, Chromium, uses and miscellaneous 7440-48-4, Cobalt, uses and miscellaneous **7440-50-8**, Copper, uses and miscellaneous 7440-55-3, Gallium, uses and miscellaneous 7440-56-4, Germanium, uses and miscellaneous 7440-58-6, Hafnium, uses and miscellaneous 7440-61-1, Uranium, uses and miscellaneous 7440-62-2, Vanadium, uses and miscellaneous 7440-65-5, Yttrium, uses and miscellaneous 7440-66-6, Zinc, uses and miscellaneous 7440-67-7, Zirconium, uses and miscellaneous 7440-69-9, Bismuth, uses and miscellaneous 7440-70-2, Calcium, uses and miscellaneous 7440-74-6, Indium, uses and miscellaneous 7723-14-0, Phosphorus, uses and miscellaneous 7782-49-2, Selenium, uses and miscellaneous 13494-80-9, Tellurium, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts containing, for oxidation)

IT **74-90-8P**, **Hydrogen cyanide**, preparation
RL: **PREP (Preparation)**
(manufacture of, from methanol ammoxidn., antimony-phosphorus-containing catalyst for)

IT **7429-90-5**, Aluminum, uses and miscellaneous **7439-95-4**, Magnesium, uses and miscellaneous **7440-05-3**, Palladium, uses and miscellaneous **7440-06-4**, Platinum, uses and miscellaneous **7440-22-4**, Silver, uses and miscellaneous **7440-33-7**, Tungsten, uses and miscellaneous **7440-50-8**, Copper, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts containing, for oxidation)

RN 7429-90-5 HCAPLUS
CN Aluminum (CA INDEX NAME)

Al

RN 7439-95-4 HCAPLUS
CN Magnesium (CA INDEX NAME)

Mg

RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-22-4 HCAPLUS
CN Silver (CA INDEX NAME)

Ag

RN 7440-33-7 HCAPLUS
CN Tungsten (CA INDEX NAME)

W

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

IT **74-90-8P, Hydrogen cyanide**, preparation
RL: **PREP (Preparation)**
(manufacture of, from methanol ammoxidn., antimony-phosphorus-containing catalyst for)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

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L121 ANSWER 17 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1979:559766 HCAPLUS
DN 91:159766
OREF 91:25767a,25770a
TI **Hydrogen cyanide**
IN Weigert, Frank J.
PA du Pont de Nemours, E. I., and Co., USA
SO U.S., 6 pp.
CODEN: USXXAM
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI US 4164552 A 19790814 US 1978-905970 19780515 <--
PRAI US 1978-905970 A 19780515 <--
AB HCN is manufacture by reacting a hydrocarbon having at least 3 C atoms with NH3 at 650-950° in the presence of a catalyst. Thus, NH3 and PhMe were passed at 20 and 2.7 mL/h, resp., through 3 g of Zn-containing HY faujasite at 725° to produce an exit gas containing 12 mol% HCN.
IC **C01C0003-02**
INCL 423376000
CC 49-2 (Industrial Inorganic Chemicals)
ST **hydrogen cyanide** manuf; toluene ammonia reaction catalysis; faujasite HY catalyst
IT Zeolites, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(HY, catalysts, for **hydrogen cyanide** manufacture from ammonia and hydrocarbons)
IT 1308-38-9, uses and miscellaneous 1309-48-4, uses and miscellaneous 1314-13-2, uses and miscellaneous 1314-23-4, uses and miscellaneous 1314-35-8, uses and miscellaneous 1314-62-1, uses and miscellaneous 1344-28-1, uses and miscellaneous 1345-13-7 7439-88-5, uses and miscellaneous 7439-91-0, uses and miscellaneous **7440-05-3**, uses and miscellaneous **7440-06-4**, uses and miscellaneous **7440-50-8**, uses and miscellaneous 7631-86-9, uses and miscellaneous 13463-67-7, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, for **hydrogen cyanide** manufacture from ammonia and hydrocarbons)
IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, from ammonia and hydrocarbons, catalysts for)
IT **7440-05-3**, uses and miscellaneous **7440-06-4**, uses and miscellaneous **7440-50-8**, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, for **hydrogen cyanide** manufacture from ammonia and hydrocarbons)
RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

RN 7440-50-8 HCAPLUS
CN Copper (CA INDEX NAME)

Cu

IT **74-90-8P**, preparation
RL: **IMF (Industrial manufacture)**; **PREP (Preparation)**
(manufacture of, from ammonia and hydrocarbons, catalysts for)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

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L121 ANSWER 18 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1979:137530 HCAPLUS
DN 90:137530
CREF 90:21793a,21796a
TI **Hydrogen cyanide** from organic nitriles
IN Weigert, Frank J.
PA du Pont de Nemours, E. I., and Co., USA
SO U.S., 6 pp.
CODEN: USXXAM
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 4136156	A	19790123	US 1976-718681	19760830 <--
PRAI US 1976-718681	A	19760830 <--		

AB HCN was prepared by treating organic nitriles with H at 400-700° in the presence of a catalyst consisting of a supported metal from the group Ir, Rh, Ru, Pd and Pt or an oxide or supported oxide of Al, Cr, Mg, Mn and Zn. Thus, 10 mL/h PhCN and 36 mL/min H passed over 2 g of a 1.1% Pd/SiO2 catalyst at 550° gave 45% HCN.
IC **C01C0003-02**
INCL 423372000
CC 25-20 (Noncondensed Aromatic Compounds)
Section cross-reference(s): 23, 78
ST nitrile hydrodecyanation catalyst; **hydrogen cyanide** elimination nitrile
IT Nitriles, reactions
Nitriles, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(dehydrocyanation of, catalysts for **hydrogen cyanide** preparation by)
IT 1308-38-9, uses and miscellaneous 1309-48-4, uses and miscellaneous 1314-13-2, uses and miscellaneous 1344-28-1, uses and miscellaneous 1344-43-0, uses and miscellaneous 7439-88-5, uses and miscellaneous **7440-05-3**, uses and miscellaneous **7440-06-4**, uses and miscellaneous 7440-16-6, uses and miscellaneous 7440-18-8, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts for dehydrocyanation of nitriles)
IT 75-05-8, reactions 100-70-9 107-13-1, reactions 109-77-3 126-98-7 140-29-4 529-19-1 626-17-5 2074-87-5 2947-60-6 3302-16-7 4360-47-8 13730-09-1 21789-36-6 34136-59-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrodecyanation of, catalyst for **hydrogen cyanide** preparation by)
IT 100-47-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrodecyanation of, catalysts for **hydrogen cyanide** preparation by)
IT **74-90-8P**, preparation
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**

(preparation of, by hydrodecyanation of nitriles, catalysts for)
IT **7440-05-3**, uses and miscellaneous **7440-06-4**, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, for dehydrocyanation of nitriles)
RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **74-90-8P**, preparation
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(preparation of, by hydrodecyanation of nitriles, catalysts for)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

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L121 ANSWER 19 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1977:127965 HCAPLUS
DN 86:127965
OREF 86:20103a,20106a
TI **Hydrogen cyanide** from the reduction of nitric oxide over platinum, palladium, ruthenium, Monel and perovskite catalysts
AU Voorhoeve, R. J. H.; Patel, C. K. N.; Trimble, L. E.; Kerl, R. J.; Gallagher, P. K.
CS Bell Lab., Murray Hill, NJ, USA
SO Journal of Catalysis (**1976**), 45(3), 297-304
CODEN: JCTLA5; ISSN: 0021-9517
DT Journal
LA English
AB HCN was produced in mixts. of NO, CO, and H2 at 400-800°C. Most active in HCN production was a supported Pt catalyst, followed by Pd, Cu-Ni and Ru, in that order. Perovskite La0.8K0.2MnO3 yields little HCN, but over La0.8K0.2Mn0.94Ru0.06O3 the yield is higher than over either Ru or the matrix perovskite. The effects of H2O vapor concentration and space velocity on the yield of HCN were studied. The formation of HCN is tentatively explained on the basis of an intermediate of composition [NCO], which may be an isocyanate.
CC 67-2 (Catalysis and Reaction Kinetics)
ST nitric oxide redn catalysis; **hydrogen cyanide** formation catalysis; carbon monoxide formation **hydrogen cyanide**; platinum catalysis **hydrogen cyanide**; palladium catalysis **hydrogen cyanide**; monel catalysis **hydrogen cyanide**; ruthenium catalysis **hydrogen**

cyanide
IT Reduction catalysts
(transition metals, for nitric oxide in presence of carbon monoxide and hydrogen, **hydrogen cyanide** formation with)
IT **7440-05-3**, uses and miscellaneous **7440-06-4**, uses and miscellaneous 7440-18-8, uses and miscellaneous 59707-43-6 62303-90-6
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysis by, of **hydrogen cyanide** formation in reduction of nitric oxide with carbon monoxide and hydrogen)
IT **74-90-8P**, preparation
RL: FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in reduction of nitric oxide in presence of carbon monoxide and hydrogen)
IT 10102-43-9, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reduction of carbon monoxide and, **hydrogen cyanide** formation in catalytic)
IT 630-08-0, uses and miscellaneous
RL: USES (Uses)
(reduction of nitric oxide in presence of, formation of **hydrogen cyanide** in catalytic)
IT **7440-05-3**, uses and miscellaneous **7440-06-4**, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysis by, of **hydrogen cyanide** formation in reduction of nitric oxide with carbon monoxide and hydrogen)
RN 7440-05-3 HCAPLUS
CN Palladium (CA INDEX NAME)

Pd

RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT **74-90-8P**, preparation
RL: FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in reduction of nitric oxide in presence of carbon monoxide and hydrogen)
RN 74-90-8 HCAPLUS
CN Hydrocyanic acid (CA INDEX NAME)

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(FILE 'HOME' ENTERED AT 15:20:38 ON 12 FEB 2008)
SET COST OFF

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     FILE 'REGISTRY' ENTERED AT 15:20:51 ON 12 FEB 2008
                E HYDROGEN CYANIDE/CN
L1              1 S E3

     FILE 'HCAPLUS' ENTERED AT 15:21:44 ON 12 FEB 2008
L2          17226 S L1
L3          10425 S HYDROGEN CYANIDE
L4             23 S CARBON HYDRIDE NITRIDE
L5           9538 S FORMIC ANAMMONIDE OR FORMONITRILE OR PRUSSIC ACID OR HYDROCYA
L6          20567 S L2-L5
L7           3492 S L6(L) PREP+NT/RL
L8           2311 S L6(L) PROC+NT/RL
L9           2705 S L2 (L) PREP+NT/RL
L10          2128 S L2 (L) PROC+NT/RL
L11          4768 S L7,L8 AND L9,L10
L12          4768 S L9-L11
L13           829 S L7,L8 NOT L12
L14         20567 S L6-L13
L15           732 S C01C003-02/IPC,IC,ICM,ICS
L16         20741 S L14,L15
L17         14513 S L16 AND PY<=2003 NOT P/DT
L18          3997 S L16 AND (PD<=20030228 OR PRD<=20030228 OR AD<=20030228) AND P
L19         18510 S L17,L18
L20             1 S US20060257308/PN OR (US2006-542215# OR DE2003-10309209)/AP,PR
                E VON HIPPEL/AU
L21            21 S E29-E33
                E VONHIPPEL/AU
                E HIPPEL/AU
L22             2 S E17,E18
                E WEBER/AU
L23            18 S E3
                E WEBER R/AU
L24           800 S E3-E26
                E WEBER ROB/AU
L25           192 S E4-E30
                E BEWERSDORF/AU
L26            30 S E3,E10,E11
                E GAIL/AU
L27            12 S E17,E19
                E SCHWARZ/AU
L28            25 S E3
                E SCHWARZ H/AU
L29           470 S E3-E17
L30           907 S E67-E71
                E DE GUSSA/CO
L31             2 S E3,E4/CO,PA,CS
                E DEGUSSA/CO
L32          5640 S DEGUSSA?/CO,PA,CS
                E  E19+ALL
L33          3706 S E2-E4/CO,PA,CS
                E DEGUS/CO
L34            10 S E4-E11/CO,PA,CS
L35           104 S L20-L34 AND L16
L36            91 S L35 AND L19
L37             5 S L19 AND BMA

     FILE 'REGISTRY' ENTERED AT 15:31:42 ON 12 FEB 2008
L38             1 S AMMONIA/CN
L39             1 S METHANE/CN
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     FILE 'HCAPLUS' ENTERED AT 15:32:06 ON 12 FEB 2008
L40         4201 S L19 AND (L38 OR NH3 OR AMMONIA)
L41         1133 S L40 AND (METHANE OR CH4 OR ALIPHATIC(L)(HC OR HYDROCARBON))
L42          911 S L40 AND L39
L43         1244 S L41,L42,L37

     FILE 'REGISTRY' ENTERED AT 15:32:59 ON 12 FEB 2008
L44           81 S PT/MF NOT MASS

     FILE 'HCAPLUS' ENTERED AT 15:33:08 ON 12 FEB 2008
L45           93 S L44 AND L43
L46          187 S (PT OR ?PLATINUM?) AND L43
L47          187 S L45,L46
L48           15 S L36 AND L47

     FILE 'REGISTRY' ENTERED AT 15:34:25 ON 12 FEB 2008

     FILE 'HCAPLUS' ENTERED AT 15:34:25 ON 12 FEB 2008
L49              TRA L43 1- RN :     7427 TERMS

     FILE 'REGISTRY' ENTERED AT 15:34:56 ON 12 FEB 2008
L50         7427 SEA L49
L51           37 S L50 AND (PT/ELS OR ?PLATINUM?/CNS OR 7440-06-4 OR 7440-06-4/C

     FILE 'HCAPLUS' ENTERED AT 15:36:09 ON 12 FEB 2008
L52          116 S L51 AND L43
L53          188 S L47,L52

     FILE 'REGISTRY' ENTERED AT 15:38:19 ON 12 FEB 2008
L54           10 S (COPPER OR SILVER OR GOLD OR PALLADIUM OR TUNGSTEN OR ALUMINU

     FILE 'HCAPLUS' ENTERED AT 15:39:03 ON 12 FEB 2008
L55           26 S L53 AND L54
L56           19 S L55 AND L9,L10,L15
L57           14 S L56 AND L1(L)PREP+NT/RL
L58            5 S L56 NOT L57
L59            2 S L58 AND CYANIDE/TI
L60           16 S L57,L59
L61            7 S L55 NOT L56
L62           11 S L48 NOT L55
L63            9 S L62 AND PT?
L64           25 S L60,L63
L65            2 S L48 NOT L64
L66           27 S L64,L65
                 SEL RN

     FILE 'REGISTRY' ENTERED AT 15:46:36 ON 12 FEB 2008
L67           93 S E1-E93
L68           18 S L67 AND (PT/ELS OR ?PLATINUM?/CNS OR 7440-06-4 OR 7440-06-4/C
L69            1 S L67 AND L1
L70            1 S L67 AND L38
L71            1 S L67 AND L39
L72            8 S L67 AND L54
L73           64 S L67 NOT L68-L72
L74            7 S L73 AND (CU OR AG OR AU OR PD OR W OR AL OR MG)/ELS
L75            1 S L74 AND AL2O3
L76            1 S L74 AND AU/ELS

     FILE 'HCAPLUS' ENTERED AT 15:49:05 ON 12 FEB 2008
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L77          27 S L68-L72,L75,L76 AND L66

     FILE 'REGISTRY' ENTERED AT 15:50:18 ON 12 FEB 2008
L78      149743 S PT/ELS OR ?PLATINUM?/CNS OR 7440-06-4 OR 7440-06-4/CRN
L79       12587 S L78 AND (CU OR AU OR AG OR W OR PD)/ELS
L80        9960 S L78 AND (COPPER OR SILVER OR GOLD OR TUNGSTEN OR PALLADIUM)
L81        8022 S L78 AND (7440-50-8 OR 7440-22-4 OR 7440-57-5 OR 7440-33-7 OR
L82       12602 S L79-L81
L83           3 S L54 AND 2/ELC.SUB
L84           2 S L78 AND (56127-34-5 OR 24304-00-5 OR 12057-71-5)/CRN
L85           2 S L78 AND 24304-00-5/CRN
L86          52 S L78 AND 1344-28-1/CRN
L87          37 S L86 AND 2/NC
L88          15 S L86 NOT L87
L89        2217 S L82 NOT (H OR LI OR NA OR K OR RB OR CS OR FR OR BE OR CA OR
L90        1976 S L89 NOT (P OR AS OR SB OR BI OR S OR SE OR TE OR PO OR F OR C
L91        1872 S L90 NOT (AC OR TH OR PA OR U OR NP OR PU OR AM OR CM OR BK OR
L92        1778 S L91 AND (TIS OR AYS)/CI
L93          84 S L92 AND (AL/ELS OR ALUMINIUM OR 7429-90-5/CRN)
L94           1 S L92 AND 1344-28-1/CRN
L95          84 S L93,L94

     FILE 'HCAPLUS' ENTERED AT 16:02:06 ON 12 FEB 2008
L96          38 S L95
L97          15 S L96 AND PY<=2003 NOT P/DT
L98          17 S L96 AND (PD<=20030228 OR PRD<=20030228 OR AD<=20030228) AND P
L99          32 S L97;L98
L100          4 S L99 AND ?CATALY?
L101          4 S L99 AND CAT/RL
L102          3 S L99 AND CATAL?/SC,SX
L103          3 S L99 AND B01J/IPC,IC,ICM,ICS
L104          4 S L100-L103
L105         28 S L99 NOT L104

     FILE 'HCAPLUS' ENTERED AT 16:04:51 ON 12 FEB 2008

     FILE 'REGISTRY' ENTERED AT 16:06:50 ON 12 FEB 2008
L106          1 S PLATINUM/CN

     FILE 'HCAPLUS' ENTERED AT 16:06:54 ON 12 FEB 2008
L107     155348 S L106
L108      68478 S L107 AND L54

     FILE 'REGISTRY' ENTERED AT 16:07:28 ON 12 FEB 2008
L109          1 S 57621-59-7
L110       1433 S 7429-90-5/CRN AND 7440-06-4/CRN
L111        126 S L110 AND 2/ELC.SUB

     FILE 'HCAPLUS' ENTERED AT 16:08:17 ON 12 FEB 2008
L112        682 S L109,L111
L113      16486 S L108 AND L106(L)CAT/RL AND L54(L)CAT/RL
L114         23 S L112 AND L111(L)CAT/RL
L115      16507 S L113,L114
L116         51 S L115 AND L19
L117         42 S L116 NOT L77,L104,L105
L118         15 S L117 AND L15
L119         11 S L117 AND L1(L)PREP+NT/RL
L120         19 S L118,L119
L121         19 S L120 AND L19
L122         23 S L117 NOT L121
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